ANNUAL REPORT 1982–83

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Department of Agriculture
New South Wales

REPORT OF THE DEPARTMENT OF AGRICULTURE

for the

Year ended 30th June, 1983

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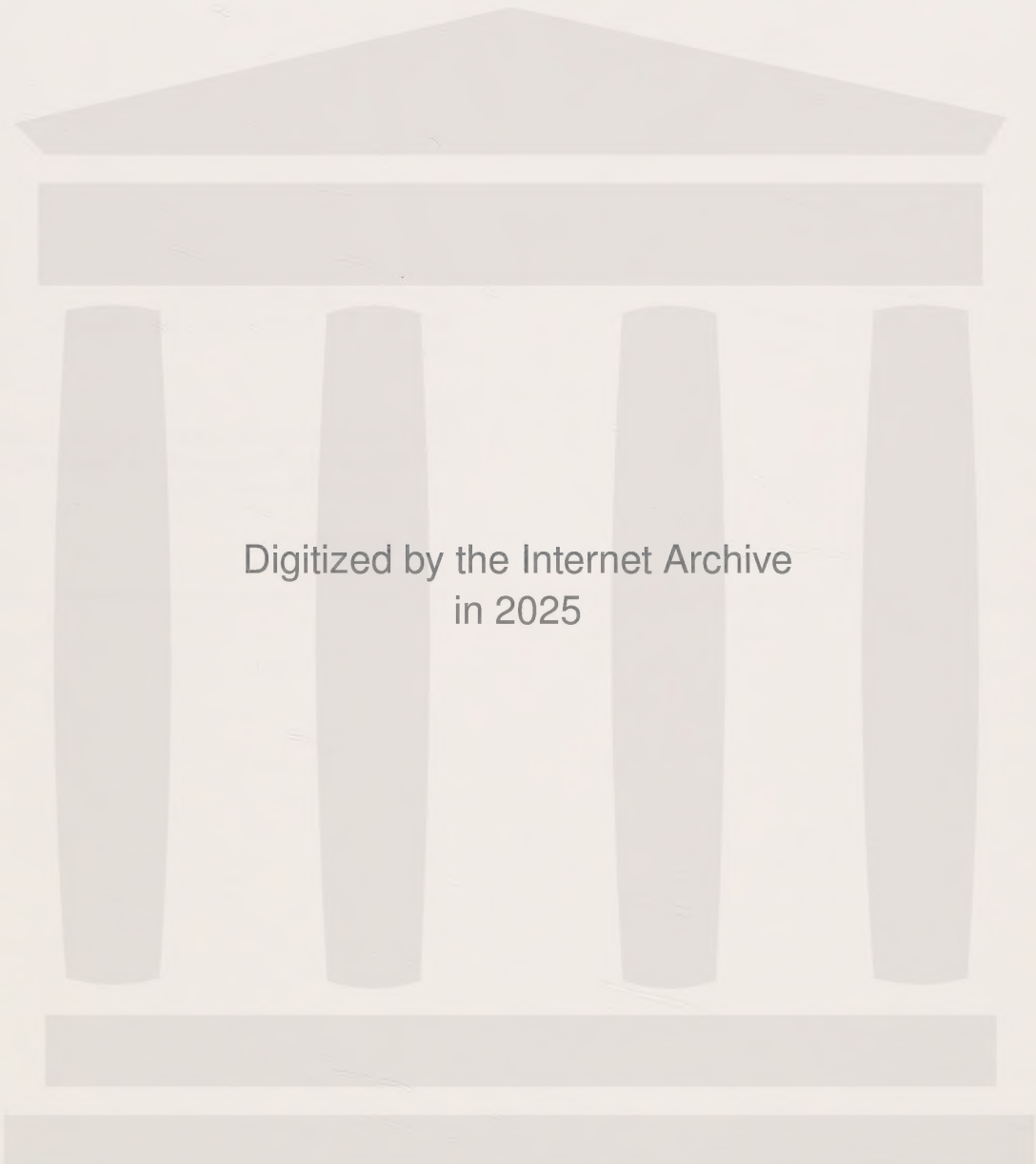
Division of Agricultural Services
Department of Agriculture New South Wales

The Hon. J.R. HALLAM
Minister for Agriculture and Fisheries
Sydney

Sir,
I have the honour to present a report reviewing the activities of the Department of Agriculture for the year ended 30th June 1983.

G.H. KNOWLES
Director-General



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The objectives of the Department of Agriculture, New South Wales are to safeguard and improve the productivity of the agricultural and fishing industries of New South Wales; and to encourage the orderly marketing of safe, acceptable produce, with consequent improvement in the prosperity and quality of life of both rural and urban communities.

The main aim of this report is to enable the Minister to table in Parliament a comprehensive record of what the Department did to attain its objectives during the year under review.

This report is also distributed to libraries and others throughout Australia and overseas, usually on an exchange basis. It is not intended for the wider audience catered for by other, more frequent publications. More detailed statistical information on agricultural and fishing industries and commodities is available from the Department and from other sources.

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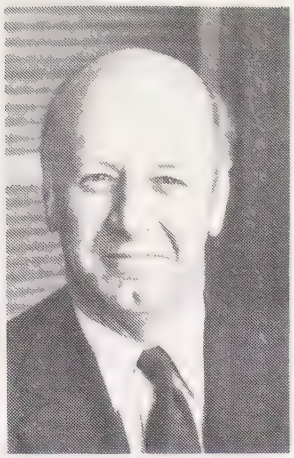


FOREWORD

by the
Director-General
of Agriculture
Mr G. H. Knowles

Drought Breaks

The worst drought of the century ended when widespread rains began falling in March.

The Government, by paying out over $230 million in various Commonwealth and State drought relief measures during the four years of drought, saved the State's agriculture from collapse and placed New South Wales farmers in a position to take advantage of the greatly improved seasonal conditions.

The Department moved quickly to ensure that not only did eligible producers receive their relief entitlements, but that they received them promptly. Drought relief processing units were set up in Head Office and at key country centres, and staffed by professional and clerical officers from all sections of the Department plus another 60 specially employed to assist. At the height of the drought, applications were received, processed and cheques mailed out within five days from Head Office.

Most drought relief measures were jointly funded by the State and Commonwealth governments. In each financial year, the State paid the first $10 million and shared the cost above that figure with the Commonwealth.

Drought, 1983.

Depending on the scheme, landholders claimed at either departmental or Pastures Protection Board offices, and received final payments from Head Office.

The Fodder Subsidy Scheme, which was not introduced until late in the drought, was 100 per cent funded by the Commonwealth, but the substantial costs of administering it were paid by the State. All payments were made from the Department's regional offices after lodgement and screening at Pastures Protection Board offices.

Fisheries Joins Agriculture

State Fisheries was integrated into the Department of Agriculture on 25th March 1983. As a result of the merger, services to the State's fishing industries will be strengthened through increased efficiencies and by sharing of resources with the much larger Department of Agriculture. A far wider range of facilities, both in research and administrative support, is now available to staff in the new Division of Fisheries.

Meat Inspection

Arrangements were finalised for the hand-over to the Commonwealth of responsibilities for meat inspection services in New South Wales. On 1st July 1983 the New South Wales Meat Inspection Service will transfer to the Export Inspection Service, Commonwealth Department of Primary Industry. The action by New South Wales is a major step towards the creation of a single national Meat Inspection Service.

Cattle Tick Control

On 21st January, the new cattle tick control programme was announced. The programme becomes operative on 1st July 1983 and from that date stockowners will be responsible for controlling cattle tick on their own properties.

The Department and the Board of Tick Control will continue to provide advice and to assist stock owners in many ways. However, dipping and spraying for tick control will no longer be compulsory within the Tick Quarantine Area.

The Board of Tick Control will continue to regulate dipping and spraying for movements out of the quarantine area.

Pesticide Resistance

The cotton bollworm, *Heliothis armiger,* has shown resistance to synthetic pyrethroid pesticides over wide areas of southern Queensland and northern New South Wales. Heliothis is a major pest of cotton and a wide range of other crops including sorghum, maize, soybeans and tomatoes. Synthetic pyrethroids, by far the most effective group of insecticides for controlling Heliothis, leave practically no residue. The Department, together with the cotton industry and the pesticide manufacturers, planned a campaign to restrict the use of synthetic pyrethroids in 1983-84, and so extend their useful life for as long as possible.

New Technique for Bee Disease Control

The honey bee's major contribution to agriculture is not the honey it produces, but the services it performs in pollinating a wide range of horticultural and agricultural crops.

Like all organisms, the honey bee is subject to diseases, the most serious of which affect the bee in its larval and pupal stages.

In association with the Australian Atomic Energy Research Establishment, the Department developed a technique of gamma radiation for sterilising disease-carrying hive material. The process provides the first realistic alternative to the current policy of burning the hive material. The world's first large scale use of the technique occurred when 1400 bee boxes were successfully irradiated.

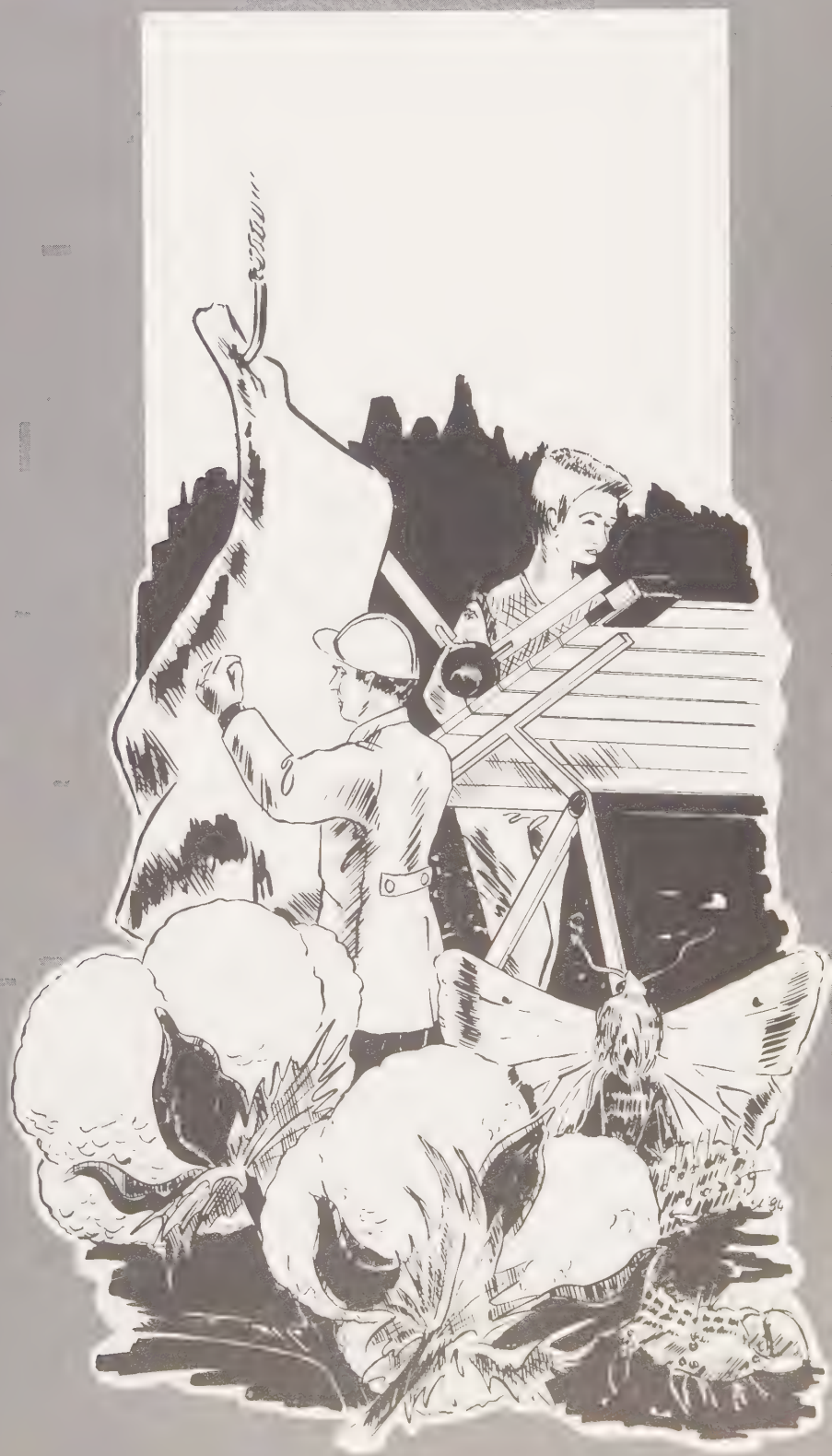
Brucellosis Eradication Campaign Ahead of Schedule

The whole of New South Wales was declared provisionally free of bovine brucellosis in March 1983, more than 12 months ahead of schedule. A further 9740 herds achieved "confirmed free" status, bringing the total of confirmed free herds to 84 per cent of all cattle herds in the State.

First Tocal Certificates in Dairying

The first eight people to complete the Dairy Apprenticeship Course at the C.B. Alexander Agricultural College at Tocal were awarded Certificates in Dairying. The course includes four years of apprenticeship to a dairyfarmer, with three years of part-time study at the College.

SIGNIFICANT EVENTS IN 1982–83



NSW Meat Inspection Service transferred to the Commonwealth

Following restructuring of the Commonwealth Department of Primary Industry and creation of the Export Inspection Service, it became clear that a single meat inspection service in New South Wales would have significant advantages to the meat industry, the livestock producer and the consumer. For uniformity, this should be a Commonwealth service, and so the New South Wales Government offered to transfer the State Meat Inspection Service to the Commonwealth. This offer, which was accepted, will assist the establishment of a single national inspection service.

Extensive administrative efforts from both State and Commonwealth were required to permit transfer of the State Meat Inspection Service and its 300 meat inspectors and 30 branders to the Commonwealth Department of Primary Industry on 1st July 1983.

An important factor in the transfer was to ensure the continued provision of abattoir disease control data necessary for departmental animal health programmes. Other State functions (such as chemical residue fat sampling, tail tagging control, control of certain abattoir stock movements and certain aspects of cattle and swine compensation) had also to be assured. This was done by formal agreement between the Minister for Agriculture and Fisheries and the Minister for Primary Industry. State legislation was amended to give Commonwealth veterinary officers and meat inspectors the authority to perform the required State functions.

A permanent consultative mechanism between the Commonwealth Department of Primary Industry, the New South Wales Department of Agriculture and industry groups was established. This will ensure continuing consultation on State domestic meat inspection requirements.

Licensing of non-export slaughtering and meat processing establishments will remain a State responsibility.

Synthetic Pyrethroid Resistance in Cotton Bollworm

Cotton bollworm, *Heliothis armiger,* is a major pest of cotton and a wide range of other crops including sorghum, maize, soybeans, tomatoes and tobacco. Insecticides are regularly applied to control this pest, particularly in cotton, and the synthetic pyrethroids (SPs) are by far the most effective group of insecticides. Resistance monitoring in *H. armiger* has been carried out by departmental entomologists since 1975, and SPs were incorporated in this programme when they were first registered for use in 1977.

Cotton bollworm entering a cotton boll.

Samples of *H. armiger* are collected from crops in New South Wales, Queensland and occasionally Western Australia, and subjected to laboratory tests.

In February 1983, SP-resistance was detected in a sample from Emerald, Queensland, where further tests have shown it to be widespread. The resistant caterpillars could not be economically controlled with SPs, and serious losses of cotton and soybeans were reported. A survey of resistance in other areas revealed resistant caterpillars in crops at Moree, Narrabri, Warren and Coonabarabran, and at St. George and Kingaroy in southern Queensland. The results indicate a low frequency of resistant *H. armiger* over a wide area of the summer rainfall cropping zone of inland eastern Australia. Further widespread use of SPs in the area could rapidly make these insecticides ineffective against this major pest.

A control strategy was formulated for the 1983-84 season, based on reduced use of SPs alternated with insecticides from other chemical groups. Broad agreement was reached between the Department, the Queensland Department of Primary Industries, the agricultural chemical industry, and representatives of grower organisations concerning implementation of this strategy in 1983-84.

Wage Pause Programme 1983

In April 1983, three projects to the value of $2,199,840 were approved for the Department's Wage Pause Programme. A total of 170 recruits were obtained from the Commonwealth Employment Service, including disadvantaged and physically handicapped people.

In Project 1, 47 people were employed for 32 weeks to maintain and enhance the Department's research and educational institutions in the North Coast Region, New England, Hunter and Metropolitan Region, Central Western, South Eastern and Illawarra Region, and at Head Office.

Project 2, the Community Advisory Services Project, employed 71 people for a 36 week period. The project covered all five Regions and Head Office, and was designed to assist the development of advisory services, especially for demonstrations and for the upgrading of the Department's visual aids.

Project 3, the Drought Relief Assistance Project, runs for 24 weeks. Fifty two people were employed in Sydney, Gunnedah, Dubbo, Orange and Leeton to pay drought relief claims and assist with associated responsibilities.

All three projects were well underway by the end of 1982-83, and the Regions reported that the projects were making favourable progress in achieving their aims.

Approval was granted for a fourth project, the Women's Employment Programme, in June 1983. Four research institutions and 15 Pastures Protection Boards throughout the State were allocated a total of $187,470 to employ 23 women for 26 weeks each. The project was aimed at maintaining and improving proficiency in clerical and administrative skills.

Salinity

Soil Salinity

Salinity is becoming by far the most important problem threatening crop production in the irrigated areas of south eastern Australia. Current salinity control involves leaching, but this method causes water tables to rise, and increases the salinity of rivers and streams.

To maintain economic yields, soil permeability must be sufficient to avoid the accumulation of salts. Experiments were started that investigate the physical and chemical properties of soils of low permeability; their sensitivity to dispersion in saline water; and increases in soil sodium in relation to irrigation water quality and quantity.

Plant Breeding for Salt Tolerance

The salt tolerance of plants may be increased by improving the balance of essential elements. Recent research using tomato plants demonstrated that maintaining of optimum supplies of phosphorus can allow the plants to partially, or completely, overcome salinity damage. The success of such an approach should be very rewarding in the long term, not only in reducing salinity problems in existing irrigation areas, but also in providing a means of safely utilising the vast reserve of saline groundwater for crop production.

AGRICULTURE IN 1982–83

The wheat crop was drastically reduced by drought to 1.5 million tonnes: one quarter of the 5.9 million tonnes produced the previous season, and the smallest crop since 1965. The only large areas which produced crops even approaching average yields were one area north east of Moree, and another between West Wyalong, Wagga and Albury. For some districts, most notably around Condobolin and the more marginal country in the north west, this was the fourth consecutive year of crop failure.

The wheat delivered was of very good quality, with record or near record protein levels. There was almost no weather damage except in grain from a few pockets in the north, and grain was surprisingly well-filled. Close to 1 million tonnes were delivered to the Grain Handling Authority.

Diseases

There were few disease problems. Stripe rust was reported only in irrigated crops, with some crops in the Lachlan Valley being sprayed for control. A number of crops suffered significant yield loss due to crown rot, but speckled leaf blotch and stem rust were insignificant.

Wheat Yellowing

Wheat yellowing is often a serious problem affecting yields over thousands of hectares, particularly in the southern wheat belt. It is caused by magnesium deficiency arising from soil acidity. The type of nitrogenous and phosphatic fertilizers used can affect the severity of the problem.

Studies of one problem soil from Young showed that a low rate of lime banded near the seed is ineffective, whilst the application of magnesium is beneficial, either alone or with lime at 1 tonne per hectare.

New Varieties

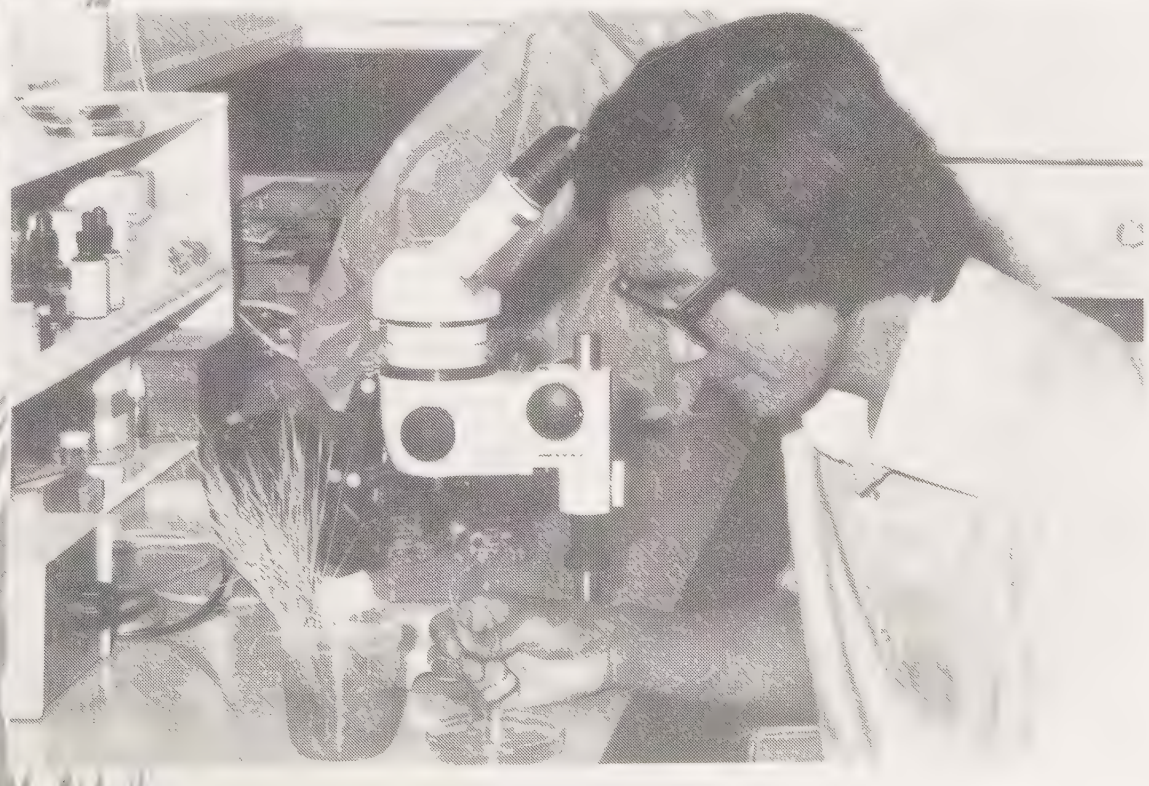
The newly released variety Harrier, bred at Temora Agricultural Research and Advisory Station, became the first departmental wheat variety for many years to be accepted into the Prime Hard wheat class.

Two other winter wheat lines bred at Temora entered their final field and quality testing, and were expected to be released in spring 1983. The variety Takari, which was released for sowing in the 1983 season, was the first variety bred under the frost resistance breeding programme based at the Tamworth Agricultural Research Centre. Takari has significantly better resistance to frost than current commercial wheat varieties, giving it a more flexible sowing time than most spring wheats.

Remote Sensing

The Remote Sensing Section continued to develop methods of utilising remote sensing data to monitor the winter cereal growing area. Although severely curtailed by drought, the work showed that in some areas estimates of areas prepared for sowing could be derived from Landsat images obtained in June/July.

Thousands of cereal crossbreds and selections are screened for every new commercial variety released.



Other Cereals

Barley and Oats

Barley and oat production was even more drought affected than wheat. Barley production was estimated at 155 000 tonnes (853 000 tonnes in 1981-82) while oats was estimated at 122 000 tonnes (820 000 tonnes).

The Barley Marketing Board was forced to obtain almost all its requirements for malting barley from South Australia and Western Australia, while the Oats Marketing Board took in only a few thousand tonnes of oats.

Triticale

Triticale production was an estimated 52 000 tonnes (59 000 tonnes), but the area sown was almost double that of the previous year.

Stem rust was reported on a number of crops of triticale, and several were virtually wiped out. Fortunately, several varieties remain resistant at this stage.

Summer Cereals

The summer cereals (rice, sorghum and maize) fared better than the winter cereals, but were still affected by the drought. Only 83 000 hectares of an expected 120 000 hectares were sown to rice because of the irrigation water shortage. Further water problems resulted in only about 70 000 hectares being watered through to harvest. Conversely, wet conditions in May and June delayed harvesting. Production may reach only 490 000 tonnes, compared with a record 832 000 tonnes the previous season.

The Remote Sensing Section investigated the use of Landsat data to monitor rice areas in the Murrumbidgee Irrigation Area in 1982. The work was successful in discriminating rice from other land covers, and in estimating the total area under rice. As a result, the Section developed a methodology to monitor the rice growing area, and proposed to implement a semi-operational programme in 1983-84.

Rice milling: rice milling aims to produce a maximum of whole polished grains because broken grains give a lower return.

Departmental chemists used scanning electron microscope techniques to study cell packing and internal cellular structure. As a result, it was hoped to make selections in the rice breeding programme to reduce the incidence of broken grain.

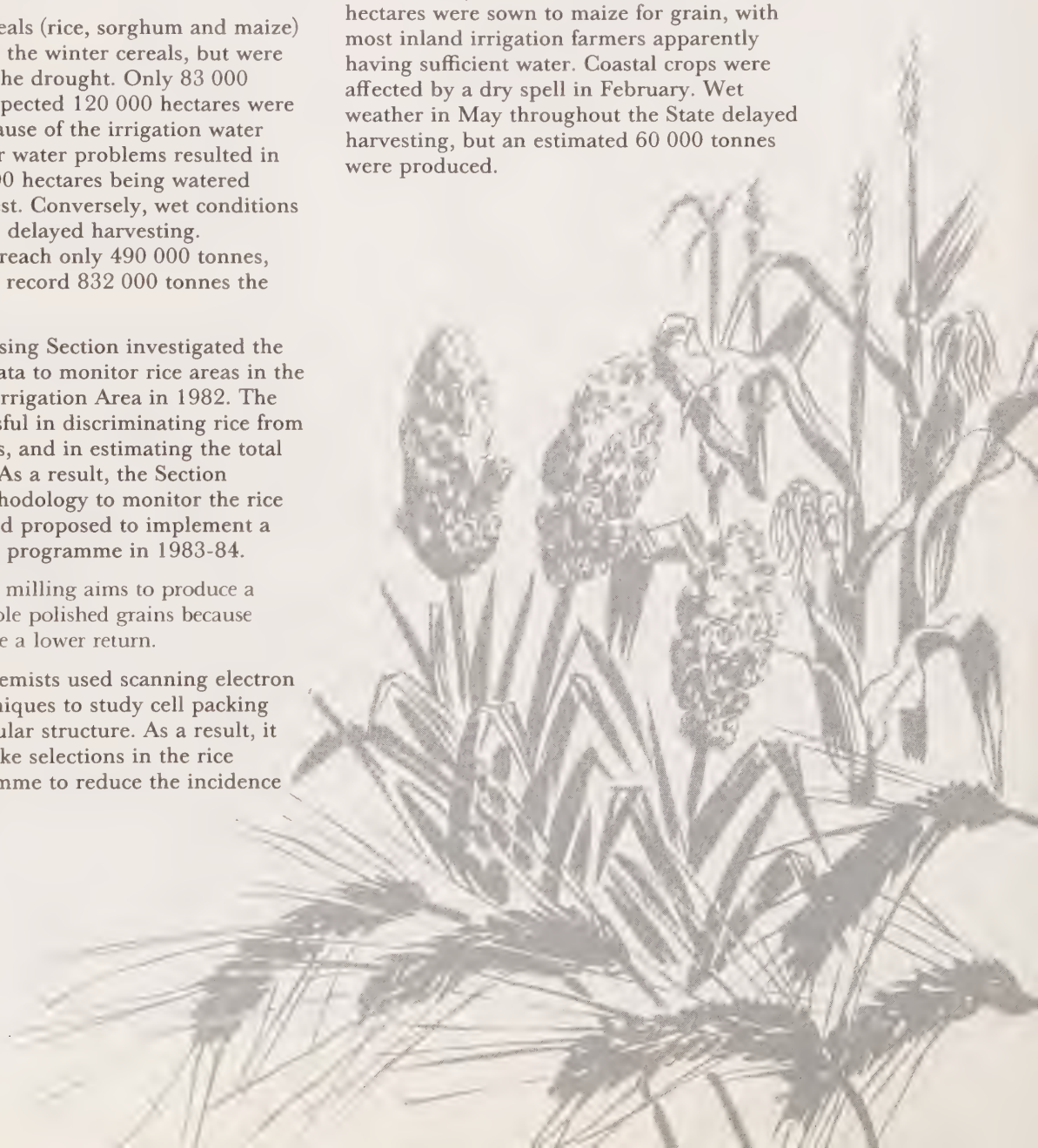
Grain Sorghum

Following a rain in mid October, about 135 000 hectares were sown north of the Gywdir Highway that eventually produced an estimated 200 000 tonnes. A further 110 000 hectares were sown following a Christmas–New Year rain mostly south of the Highway, but the crop was badly affected by hot, dry conditions, and then by a deluge of rain as harvest approached. The total production from both sowings may reach 310 000 tonnes.

A sorghum field trial was established to determine the effect of various tillage and no-till practices, and to measure the long term environmental impact of herbicide application. No-till herbicide treatments outyielded the mechanical cultivation treatment.

Maize

The maize crop was perhaps the least affected by the drought. It was estimated that 13 000 hectares were sown to maize for grain, with most inland irrigation farmers apparently having sufficient water. Coastal crops were affected by a dry spell in February. Wet weather in May throughout the State delayed harvesting, but an estimated 60 000 tonnes were produced.



The drought prevented some sowings and caused substantial abandonment of others. Extremely wet autumn weather resulted in further summer crop yield losses and a marked reduction in quality.

The areas sown and harvested for important non-cereal field crops were:

	Hectares	
	Sown	Harvested
Cotton	72 090	71 890
Linseed	1 490	930
Rapeseed	6 680	4 630
Safflower	5 550	3 840
Soybean	16 900	11 335
Sunflower	69 285	37 130
Tobacco	505	505
Lupins	28 000	14 000*

*estimated

Cotton

Irrigated sowings were substantially fewer than planned, and the total sown area was smaller than in 1981-82. A small proportion received only one irrigation, but most received two or more.

Very wet autumn weather delayed and disrupted picking, and caused substantial losses and reduced fibre quality. Production was expected to be no more than 310 000 bales, a sharp reduction on the 478 000 bales harvested in 1982.

The SIRATAC management system for insect pest control expanded further under the management of SIRATAC Ltd, the scientific advisory committee on which the Department and CSIRO are represented.

During the year, a cotton gin was established at Bourke to provide local growers with an alternative to gins in the Macquarie and Namoi Valleys.

Another development was the expansion of cotton growing in the Boggabri district to 650 hectares.

The resilience and productivity of raingrown cotton on long fallows during drought so reassured dryland cotton growers that expanded sowings will be made in future seasons.

A most serious development was the identification of synthetic pyrethroid insecticide resistance in the cotton bollworm, *Heliothis armiger,* in the central highlands of Queensland, and its subsequent appearance in northwest and north central west areas of New South Wales in cotton and other crops. Strategies were developed in consultation with the Queensland Department of Primary Industries, pyrethroid manufacturers and the Agricultural and Veterinary Chemicals Association, that may minimise the impact of this major threat. See *SYNTHETIC PYRETHROID RESISTANCE IN COTTON BOLLWORM.*

The decline in cotton yields in north western New South Wales is believed to be due to the structural deterioration of cracking clay soils under intensive irrigated cropping. Current research indicates that deep ripping is beneficial provided that this is carried out when the soil is dry. Safflower was also superior to wheat in conditioning the soil for the following cotton crop, and more beneficial for the soil than deep ripping alone.

Tea Tree Oil (*Melaleuca alternifolia*)

Remarkable market opportunities were claimed in the promotion of syndicated investment for the product of this native species. However, they could not be reconciled with the long experience of reputable refiners/marketers who are well acquainted with overseas essential oil markets and buyers.

Buffalo Gourd

Promotion of this species as a potential alternative income source in arid and semi-arid areas was not justified by results of pilot plantings. They did not grow well, and failed to produce significant quantities of gourd. Observations in United States and Mexican arid areas indicate that the species only grows vigorously where additional water is available, and this was confirmed by local experience.

Rapeseed

New methods and techniques were used to improve the analysis of rapeseed, and so provide the rapeseed breeding programme with an accurate and more rapid service for the identification of potential breeding lines.

Grain Legumes

Winter Legumes: Fewer than 1000 hectares of chickpeas were grown, mainly of the mostly irrigated canning variety, Opal. There was growing interest in the Queensland variety, Tyson, for dryland production.

Lupins suffered badly from the drought, with 28 000 hectares planted and only an estimated 14 000 hectares harvested. Prices were good for the estimated 10 000 tonnes of lupin grain.

Summer Legumes: Plantings of cowpea for grain production were estimated at 8200 hectares, and an estimated 1500 hectares of mungbeans were sown. Both suffered badly from the rains in May, when many crops were almost ready for harvest. The limited crops of adzuki beans on the north coast all suffered either from weed competition or rain damage or both.

Soybean irrigated sowings were cut by 75 per cent, while coastal sowings increased by 50 per cent. However, the difficult climatic conditions resulted in only 70 per cent of the crop being harvested. Large quantities of lupins produced for seed were unacceptable for sowing.

The cooperative programme with the University of Sydney to develop new soybean varieties for south-western irrigated districts resulted in registration of the varieties Lawry, Ridley and Chaffey for oil and protein production.

Sunflower

Spring sown areas were restricted by the lack of sub-soil moisture and rain. Mid-summer rains enabled large areas to be opportunity sown, but bad follow-up conditions resulted in more than 50 per cent of the crop being abandoned.

Guayule

The drought, although retarding the guayule research project, demonstrated the plant's considerable drought tolerance. At Condobolin, pre-planting ripping with or without supplementary irrigation improved the growth and development of guayule, apparently because of better water retention. Pilot experiments assessed survival and ratoon re-growth rates following removal of different proportions of wood and foliage. They showed that actively growing plants harvested in summer suffered high mortality, whilst those under moisture stress at that time survived well. Mortality was markedly reduced during the cooler months, and partially defoliated plants had a high survival rate.

Techniques were developed for the optimal extraction of rubber accumulated in guayule stems. In a cooperative study to compare results of resin and rubber analyses between different laboratories, 30 plant samples from Arizona were analysed by the Department. The results compared favourably with those from most of the other laboratories participating in the study coordinated by the United States Department of Agriculture.

A senior departmental officer and CSIRO officers attended a guayule research development workshop at Saltillo, Coahuila, Mexico, under the Mexico–Australia Science and Technology Agreement. They also attended the Guayule Rubber Society's fourth conference at the University of California, Riverside.

The North American native desert plant, guayule, is being assessed as an alternative source of natural rubber.

Pastures

Pasture production was disastrously affected by drought, with more than 90 per cent of the State drought declared for most of 1982-83.

Forced livestock sales, features of recent years, were intensified. Large numbers of livestock were agisted to the few more favoured areas at a time when not only fodder, but also farm water supplies, were becoming increasingly limited in southern and central inland areas.

There was very good pasture response from the autumn relief rains in areas where temperatures were still sufficiently high. In the colder tablelands the response was restricted.

One effect of the drought was to seriously reduce the perennial grass component of improved pastures in the higher rainfall tablelands and northern slopes. This allowed weed invasion on a massive scale, with Paterson's curse and thistles most prominent. A massive effort of pasture renovation remains to be undertaken.

Subterranean Clover

Reserves of subterranean clover seed in the soil ran down dramatically during the drought. A survey of tableland pastures showed seed reserves of less than 100 kg per hectare in 66 per cent of pastures, and only 34 per cent with more than 100 kg per hectare (a soil seed reserve of 100 kg per hectare is barely adequate for reliable regeneration). The recommended varieties, Mt Barker and Woogenellup, were consistently poor performers in the survey, indicating the need for the rapid development of alternative varieties. Despite the great run-down in seed reserves, the autumn break allowed the

remaining seed to germinate and grow rapidly. This resulted in a pasture recovery generally better than expected. Nevertheless, like the perennials, many annual pastures became dominated by weeds.

Dalkeith, a new sub clover variety selected in Western Australia, was released in New South Wales during the year. This early to mid season variety with a high hard seed level showed superior persistence and productivity to currently recommended varieties on the central western slopes. Commercial quantities of seed will become available in 1984.

Recognition of the importance of acid soil related problems as a limitation to agricultural productivity increased. The use of lime in conjunction with acid tolerant species and varieties as part of the farming system also increased.

Barrel Medics

All available varieties of medic are susceptible to aphid attack, and none can be confidently recommended. However, two new barrel medics show some promise, but commercial quantities of seed will not be available until 1985.

Lucerne

New lucerne varieties from both private breeders and public programmes continued the very satisfactory advance of this species. The combination of multiple aphid resistance and resistance to the major diseases was achieved in a number of good performing varieties. The general recovery in lucerne was reflected in increasing sowings, mainly with the new varieties.

Pasture Fertilizing

Little pasture top dressing took place in 1982-83 because of extremely low net farm incomes. Other contributing factors included the dry conditions at the beginning of the season; the expectation that the residual effects of earlier top dressings would be better than usual because of the dry conditions; the reduced number of livestock on most holdings; and the weedy composition of many pastures.

Superphosphate application: Experimental results analysed during the year suggest that climate influences the increase in soil phosphate levels between consecutive annual topdressings of superphosphate. In the period between May 1981 and May 1982, which included the only wet winter during the prolonged drought, the traditional autumn application of superphosphate resulted in the least increase in soil phosphate.

Lime for tablelands pasture soils: Aluminium toxicity reduces the yield of pastures and crops throughout much of the heavier rainfall areas of the coast and tablelands. Field studies, supported by the Wool Research Trust Fund, were begun in 1979 to provide information on lime requirements in these areas. Despite drought during much of the trial, Phalaris and lucerne plant counts in each treatment plot correlated well with the rates of lime used. There was also a strong negative correlation between the amount of lime applied and the exchangeable aluminium present.

The large accession block at the Agricultural Research Station, Grafton, is used to test clovers and other plants from all over the world.

Tree and Vine Crops

Citrus

The production of 220 271 tonnes was 17 per cent greater than the previous crop, but still below the record 1980-81 crop of 249 966 tonnes. Severe frost damage in the inland districts, particularly in the Murray Valley, and general hot dry conditions reduced the overall crop potential. The strong demand by processors continued, particularly for Valencia oranges, but some consumer reaction to price and quality occurred at retail levels. The Fruit Industry Sugar Concession Committee increased the minimum country factory price of Valencia oranges by $6, to $111 per tonne. However, average prices paid were above this amount in most districts, with some being based on total soluble solid levels for the first time.

The price for lemons was reduced by a further $2, to $95 per tonne, but frost damage to fruit and trees will restrict supply and should ensure increased future prices.

A new composite tariff arrangement from 9th December 1982, with a five year phasing-down period on imported orange and tangerine juices, was announced by the Commonwealth. The decision was generally well received by the industry, but some concern was expressed at the phasing-down provision and the effect of future world prices.

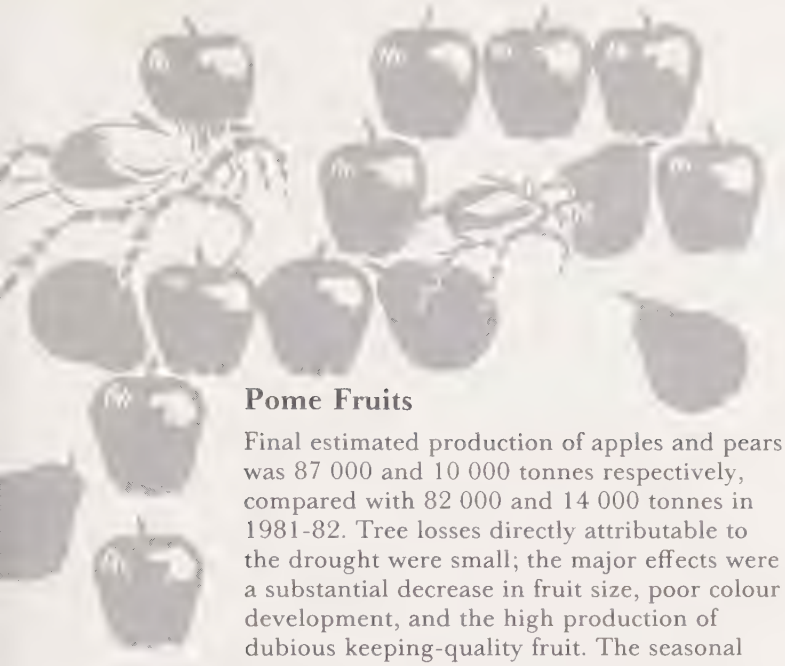
Total plantings continued to increase, and coastal plantings continued to decline slightly. Plantings, particularly with Valencia oranges and to a lesser extent Navels, increased by more than 10 per cent to a total of 3952 hectares in the Murrumbidgee Irrigation Area (MIA).

Propagation: A record 453 247 buds were supplied through the NSW Horticultural Propagation Co-operative Society Limited from the source plantings at the Agricultural Research and Advisory Station, Dareton. A near record 213 kg of selected rootstock seed was also supplied, including limited quantities of the new departmentally bred and evaluated Benton citrange, which shows promise as a replant rootstock for Eureka lemon.

Fumigant residues: Commercial fumigation trials were carried out to study ethylene dibromide residues remaining in oranges after fumigation for Queensland fruit fly. Chamber loads and forced air ventilation were developed to minimise residues, so that the levels are below those specified by Japanese authorities for imported Australian oranges.

Irrigation: After four seasons, the annual average yield of Valencia oranges from trees irrigated weekly with under-tree micro sprinklers was 15 per cent, or 33 kg per tree, higher than from trees irrigated with low level sprinklers. The micro sprinklers were also 15 per cent more efficient in total water usage throughout the trial period. Furthermore, the injection of soluble fertilizers into the irrigation system resulted in more efficient use of nitrogen and phosphorus. Savings of up to 20 per cent in these fertilizers are possible.

Long-term citrus research projects benefit nurserymen, growers, and ultimately, the consumer by breeding higher yielding, disease-free trees with tastier fruit.



Pome Fruits

Final estimated production of apples and pears was 87 000 and 10 000 tonnes respectively, compared with 82 000 and 14 000 tonnes in 1981-82. Tree losses directly attributable to the drought were small; the major effects were a substantial decrease in fruit size, poor colour development, and the high production of dubious keeping-quality fruit. The seasonal conditions once again demonstrated the need for irrigation to achieve consistent economic production.

The major pome fruit production centres of Orange and Batlow continued to grow at the expense of other districts. Highly coloured strains of Red Delicious dominated new apple plantings.

Propagation: As part of the NSW Pome Fruits Improvement Scheme, agreement was reached for the NSW Horticultural Propagation Co-operative Society to distribute the Department's improved propagation material. In the first year, the Society distributed 66 000 apple and pear buds, 3000 apple rootstocks and 6000 grafting scions.

Pests: Investigation into integrated control of orchard mites was mainly involved with monitoring the distribution of the predatory mite *Typhlodromus occidentalis,* and the occurrence of pest species. Of particular interest was the status of another predatory mite, *Phytoseiulus persimilis,* first discovered at Bilpin in 1981 and then at Oakdale in 1982. Evidence suggests that *P. persimilis* controlled two-spotted mite.

The search for agents that biologically control pests is a high priority in many research projects.

Research showed that sex pheromone traps are a promising management technique to indicate the timing of pesticide applications for codling moth control. The trials could lead to more efficient control of this pest with fewer pesticide applications.

Fruit quality: Good progress was made in developing objective maturity tests which can be used to improve the quality of apples marketed at both the start and end of each season. Flesh firmness appeared to be a good indicator for measurement of fruit quality following lengthy cool storage, whilst a fruit juice solids to acid ratio was a promising measurement of palatability early in the season.

Fumigant residues: Residue data indicate that a withholding period of up to seven days is required for apples fumigated with methyl bromide and kept in cold storage. This period would also allow the fruit to be shipped overseas.

Stone and Berry Fruits

Cherries: Crops were again reduced by drought, particularly at Young where a high proportion of fruit failed to achieve reasonable size. In some cases fruit was mechanically shaken to the ground to relieve tree stress. Total crop was only 2400 tonnes (37 per cent less than the 1981-82 crop).

Extensive losses of cherry trees due to drought occurred at Young where at least one-third of plantings, or about 450 hectares, were expected to die. Other cherry tree losses occurred at Orange (20 per cent) and in New England (10 per cent).

Dessert stone fruits: Dessert peach and nectarine crops, at 13 500 tonnes and 1750 tonnes respectively, were about 17 per cent less than in 1981-82. Coastal growers of early varieties experienced one of their best seasons with very satisfactory returns. Many tablelands and slopes growers exhausted irrigation supplies, and crops and returns were considerably reduced due to poor fruit size.

Once again, exports of 125 000 packages by air from Sydney accounted for a significant proportion of the dessert stone fruit crop. Most were destined for the Persian Gulf markets.

Canning stone fruits: The MIA canning peach crop of 9600 tonnes (36 per cent less than the 1981-82 crop) represented the first substantial decline in production caused by the extensive tree removals over recent years. The canning apricot crop was 1800 tonnes, compared with only 770 tonnes in the previous year.

Peach production is now below the viable level for cannery operation at Leeton. Growers remain pessimistic about the future of canning fruits in the MIA, despite the Commonwealth's interest free loan of $4.097 million to Letona. The cannery is urging growers to plant canning peaches, and estimated that growers

will need to plant 20 000 trees per annum for the next two to three years, and 10 000 per annum thereafter in order to maintain satisfactory production.

Plums and prunes: The Japanese and European plum crops were 4250 tonnes and 1100 tonnes respectively, being 10 per cent and 56 per cent less than in 1981-82. Small fruit size was a problem, particularly in the Young district.

The 1983 prune crop of 3100 tonnes (dry) included 2900 tonnes from the MIA and 200 tonnes from Young. The crop at Young was the worst on record for the district and followed a disastrous crop the previous year.

Prune rust, *Tranzschelia discolor,* is the most serious disease of prunes in New South Wales. Studies carried out by the Biology Branch on the effect of rust on the State's prune production, revealed that the disease causes long term average losses of about 32 per cent of current production. This estimate comprises direct losses from epidemics (12 per cent), reduced production in seasons following an epidemic (10 per cent), and the chronic effects of rust (10 per cent).

Ongoing research, carried out in the Biology Branch and at Yanco Agricultural Institute, obtained data on prune rust epidemiology and fungicidal control as the basis for a management system to control the disease. The research programme is funded by the Dried Fruits Research Committee and the Rural Credits Development Fund.

Kiwifruit: The first major crop of kiwifruit was harvested. Most was sold through central markets, with some exported. Prices were disappointing later in the season because of undersized fruit, poor grading and lack of weight in trays.

A survey was conducted amongst kiwifruit growers in the major growing areas to obtain information on leaf nutrient levels, fertilizer use, soil nutrient status and fruit production. Ultimately this project will enable plant performance to be related to plant nutrition, and allow the State's kiwifruit growers to manage their fertilizer programmes more effectively.

Future plantings: Further reductions in areas of prunes, canning peaches and strawberries are expected, with expansion in areas of kiwifruit, blueberries, dessert peaches and nectarines.

Grapes

The State's vintage was estimated at 117 000 tonnes, which exceeded the previous year's vintage by 3000 tonnes (however, there were about 13 000 tonnes of surplus grapes unpicked in the MIA in 1981-82). The Hunter Valley vintage of 12 800 tonnes was well below potential due to drought and scarcity of irrigation water, particularly in the Upper Hunter. Mudgee was affected much more seriously, and the 400 tonnes produced was about 17 per cent of the 1981-82 vintage. In irrigation areas, crops were about average. Quality for wine making in all districts was considered good to excellent.

The 1982-83 dried vine fruit harvest was slightly lower than in the previous year.

An estimated 12 800 tonnes of dried vine fruit were produced, somewhat lower than in 1982, mainly due to smaller currant and raisin crops. Conditions during harvest were generally very good, although substantial rain in March caused a darkening of drying sultanas.

The area of grapevines decreased by about 300 hectares, principally due to removals in the MIA, where the area dropped from 4960 to 4779 hectares following recommendations to remove unwanted and surplus varieties. Other decreases included Mudgee, down by 19 to 503 hectares; Upper Hunter, down by 24 to 1210 hectares; and Jerilderie, reduced by 48 hectares to 28 hectares. Minor increases occurred in the Lower Hunter and Lower Murray, with a significant table grape component in the latter.

Grapevines grafted on rootstocks produced 30 to 40 per cent greater yield than own-rooted vines; and even more under poor soil conditions, or when nematodes became troublesome. In grafted vines, increased nitrogen levels in the berries were found to be linearly related to higher yields. Based on California standards, the initial data suggest that most MIA vines are nitrogen deficient.

In a field trial, yield of own-rooted clones of irrigated Sultana grapevines was not affected by high salinity treatments (up to 3300 EC units) although reductions in berry size and increases in acidity were observed. However, severe leaf burn and defoliation occurred in the high salt treatment plots; and reduced vegetative growth is expected to result in severe effects on yield in the second year.

Tropical and Sub-Tropical Fruits

Bananas: The New South Wales area grown to bananas remained relatively static at about 6850 hectares, while the Queensland industry continued to expand and reached 4460 hectares. Fruit prices were extremely low, with up to 33 per cent of the State's production being left to rot in plantations at some periods. Growers in both States agreed on the need to unite and develop strategies for stabilising the industry on a national basis.

The annual cost of operating the industry-funded bunchy top control scheme rose to $240,000. Concerned at the high cost and reduced services, several large growers withdrew from the scheme. This could lead to the scheme's demise, and result in a dramatic increase in disease.

Other tropical fruits: The areas of sub-tropical fruits such as avocados, macadamias, custard apples and lychees increased further, and interest in these crops remained high.

Deciduous Tree Nuts

Pecans: Harvesting of the pecan nut crop in the Moree district was delayed due to excessively wet conditions in the autumn. This crop will yield an estimated 50 per cent less than the record 1982 crop of 1800 tonnes. Drought and delayed irrigation in the spring to conserve water were responsible for the reduction.

An investigation of the nutrition of pecan nut trees growing in north western New South Wales was almost completed. The work showed that the best time for leaf sampling was between December and February, which corresponds well with the sampling period in the United States. Average foliar nutrient levels were generally within the range deemed "adequate" by American horticulturists, and yields were extremely high by world standards.

Pistachios: A record quantity of *Pistacia atlantica* and *P. terebinthus* seed for rootstocks was distributed to potential western district pistachio nut growers.

Other deciduous nuts: Trees, excluding filbert trees, were more readily available to intending growers. Considerable interest was shown in planting chestnut trees because of the potential local and overseas markets.

Vegetables and Ornamentals

Vegetables

The planted area and production of vegetables declined in a number of districts due to lack of rain or irrigation water, or due to highly saline water. Areas worst affected were the central and southern tablelands (potatoes); Lachlan Valley (peas and beans for processing); Berrigan (potatoes); Bathurst (cole crops); and Lower Hunter (lettuces, cabbage and potatoes). Most vegetable crops are normally unaffected by drought because of irrigation.

Imports of processed vegetables caused concern to processors and growers. Imports included asparagus, tomatoes, capsicum, carrots, cauliflower, broccoli, Brussells sprouts, sweet corn and mushrooms. Imports of processed vegetables increased significantly in recent years, affecting local production of many vegetables.

Potatoes: Supplies of crisping potatoes in the State were severely restricted by the drought. The central tablelands main winter production was an estimated five per cent of normal.

Zucchini: Further cases of bitter and poisonous zucchini were reported by the public. A leading variety was involved, but fortunately only a very small percentage of plants from some batches of seed was affected.

It takes years of painstaking research before new vegetable varieties are ready for release.

After a 1200 per cent increase over the previous 15 years, nursery sales declined in 1982–83.

Broccoli: Broccoli production expanded in a number of districts. An excellent range of hybrid varieties enabled production throughout the year. Some growers "top iced" their product, and high quality lots were exported by air to Singapore.

Cauliflower: The advent of new varieties and "cell grown" seedlings enabled the cauliflower season at Bathurst to be extended into the summer months of January and February.

Onions: Increased production and cutbacks in exports because of increased supplies on world markets resulted in onion prices being somewhat depressed. Imports by Japan declined substantially, and resulted in New Zealand onions being marketed in Australia.

Garlic: The area planted to garlic increased further, and this will reduce the need for imports.

Mushrooms: Supplies to the fresh market dropped early in 1983 because of a failure of some spawn to crop as expected.

Mushrooms growers use imported peat moss as a "casing material" at a total cost to the industry of some $1.5m per year. Until now, the moss was used once and discarded. However, after two years collaborative effort by the Department, the Mushroom Growers' Assocation and a private engineering company, a prototype machine was developed which can recycle up to 65 per cent of the casing layer while maintaining good mushroom quality. The first commercial machine, costing about $100,000, is expected to enter service in late 1983.

Tomatoes: A comprehensive survey was conducted in retail stores of consumer attitudes to tomato quality and information. From the results, a number of displays and Agfacts were prepared recommending the correct methods of handling tomatoes through the marketing chain.

Ornamental Horticulture

The remarkable growth of the nursery industry from 1966 to 1981 was not continued into 1982-83, although a slight expansion occurred. The prolonged drought and associated overall recession were major concerns to nurserymen, who generally experienced a decline in nursery material sales. The nursery industry maintained liaison with Middle Eastern countries in particular, with a view to supplying suitable plant material for that region.

A study of nutrient disorder symptoms in ornamental plant species was started using a nutrient film technique. Information gained from this study will be of great value for future diagnostic work with ornamentals.

Irrigation

As a result of severely restricted irrigation water supplies in most major river valleys, cropped areas were generally small. In two major valleys the rivers were closed, and only irrigation of seed crops, fruit, vines and vegetables was permitted. The drought led to high hay prices, and significant areas of the rice crop were harvested for hay.

In May-June 1983, floods in the Darling headwaters ruined large areas of crops awaiting harvest, and caused severe erosion. The cause of the flood was flow from the south-western Queensland rivers to the Darling River, a rare event.

The Department provided information on the agricultural and economic consequences of new water policies concerning volumetric allocations, water prices, transferable water entitlements, the use and restriction of groundwater, and other matters. In addition, a statewide programme was prepared to encourage the better use of irrigation water. The Department continued to assess the desirability of individual loans under the Farm Water Supplies Act, 1946.

Weeds

Weed control programmes were severely curtailed by the drought. The Johnson grass control programmes in the Macquarie, Namoi and Gwydir valleys were most affected. However, when the drought broke, many weeds flourished in drought ravaged pastures and an explosion of Paterson's curse and other weeds resulted. Stock losses due to nitrate and alkaloid poisoning occurred.

Parthenium Weed

Parthenium weed was found in several areas in the north west of the State. A special awareness campaign was mounted to inform landholders and others of the weed and its associated health problems. All known occurrences were treated, but drought fodder from Queensland was widely dispersed in the State, and other infestations are possible.

Research

Tolerance testing of wheat and barley varieties to most commercially available soil applied and post-emergence herbicides continued at Wagga. Twenty one advanced lines and varieties were tested, and several found to be susceptible to commonly used herbicides. The tests resulted in several changes to herbicide recommendations for winter cereal crops.

The Department applied for patent of a machine which applies activated carbon at the time of seeding, and which protects the germinating seed from pre-emergence applied herbicides.

Research on the control of the noxious plants silverleaf nightshade, African love grass, alligator weed and serrated tussock continued. Several new herbicide treatments were registered as a result. The use of ropewick applicators to apply herbicides to weeds such as Johnson grass, bracken fern, rushes and many thistles was shown to be successful.

A spray-sow method was developed to allow improved species to replace tussock grass, *Poa labillardieri,* on non-arable land on the southern tablelands. Either glyphosate or 2,2-DPA is applied in early to mid-autumn, and the pasture species are surface sown in late autumn. Research also developed techniques for selectively removing African love grass, *Eragrostis curvula,* from improved pastures of *Phalaris* and *Pennisetum* by the application of tetrapion in winter and spring.

The weed research and demonstration unit at Orange carried out 25 trials in 1982-83, but due to the drought only 13 were assessed. Five trials were carried out on blackberries, and triclopyr and glyphosate gave better results than 2,4,5-T in all trials. A second unit was set up at Glen Innes for trials and demonstrations in the northern half of the State. This unit will concentrate on weeds in summer crops; pasture weeds of the northern tablelands; groundsel bush and salvinia control on the coast; parthenium weed; and biological control.

Biological Control

The Department supported the CSIRO biological control programmes on alligator weed, water hyacinth, St John's wort, common heliotrope, and more recently, salvinia. Court action continued to delay the release of agents for control of Paterson's curse. The Department provided a convenor for a Standing Committee on Agriculture working party that considered the need for Commonwealth/State legislation for future biological control programmes.

Administration

New procedures to streamline the administration of noxious plant control were announced. These included the transfer of the position of Secretary, Noxious Plants Advisory Committee from the Department of Local Government and Lands to this Department; the creation of a noxious plants control unit in the Department; and the establishment of regional noxious plants advisory groups. As well, a review of the legislation was planned by the Noxious Plants Advisory Committee.

Conference

The Second Biennial Noxious Plant Conference attracted more than 160 delegates from councils, government departments and private industry. The wide array of topics covered included drug plants, legal aspects, new herbicides, aerial and ground application techniques, biological control, management problems, new technology and noxious plant policy.

Activated carbon applied at sowing protects the germinating seedling from pre-emergence herbicides.

Remote Sensing

Following a review of the Remote Sensing Section, it was decided to concentrate on five projects including the wheat and rice monitoring programmes (see *WHEAT AND OTHER CEREALS*); an investigation into the use of Landsat for mapping agricultural land suitability; and programmes to investigate the use of Landsat in agricultural management, and to determine herbage biomass and condition.

The Department purchased image processing equipment for these programmes and installed it in the Data Processing Bureau.

An agricultural land suitability survey of Cowra Shire showed that Landsat is a potentially valuable tool for land suitability mapping. This work will continue. In cooperation with the CSIRO Division of Mineral Physics, the programme on using Landsat in agricultural management started with images being acquired in January, April and June 1983.

Workshops were held for departmental officers at Cowra, Trangie and Orange, and all district agronomists were provided with a Landsat image of their district.

Sheep

Trends in the Industry

The sheep and wool industry successfully withstood the severe drought, with sheep numbers only declining by 600 000 for the year ending 19th March 1983. The reduction of only 1.5 per cent in total sheep numbers reflected the confidence of producers in the long-term prospects of the sheep industry; their willingness to carry out adequate drought feeding programmes; and the generous drought aid provided by Government.

The prospects for wool producers appeared to be sound because of the success of the reserve price scheme; the growing preference for natural fibres; the worldwide advertising campaign of the International Wool Secretariat; and the dominant position which Australia holds in the production of fine apparel wool. Further incentives for producers to expand their flocks will be provided by the reduction in the beef cattle herd and the possibility of a world wheat glut.

Unfortunately, the drought disrupted the normal flow of lambs onto the market, and this, combined with other economic pressures (such as competition from other meats and a downturn in the domestic economy), resulted in a dramatic fall in lamb prices.

In the immediate future, producers are expected to concentrate on their wool producing flocks before increasing lamb production. However, the long-term prospects for lamb production are sound.

Advisory

During the year, the major activities of sheep and wool advisory officers were drought feeding and management strategies. The widespread nature of the drought resulted in less activity in other advisory programmes. The Department has continuously developed drought feeding and management strategies since the establishment of the Drought Feeding Unit at Glenfield after the disastrous 1944-45 drought. The excellent research at Glenfield was supported by practical drought feeding and management strategies developed by livestock advisory officers. With each drought, lessons learnt were combined with new research results and incorporated in revised recommendations for publication. Published material was supported by personal advice and a comprehensive range of drought feeding schools and field days.

The success of the drought research and advisory programme, coupled with even better drought aid, is illustrated by the dramatic improvement in the survival rate of sheep during recent major droughts expressed as a percentage of total numbers 12 months earlier.

Drought year	Sheep lost as a percentage of total sheep
1944-45	19.7
1965-66	15.2
1971-72	12.2
1980-81	5.3
1982-83	1.2

One programme given constant attention by advisory officers, and continuing support by producers, related to improved selling methods for live sheep, particularly those destined for slaughter. Sixteen livestock appraisal courses,

designed to teach live sheep appraisal skills to producers, agents and buyers, were held during the year. These courses had particular relevance to new product description development for the revised Meat Export Regulations, and the emerging systems of sight-unseen livestock sales.

The New South Wales prime lamb industry experienced increasing economic difficulties due to increasing production costs and greater market competition. In conjunction with the Department of Agriculture, Victoria, the Department held a high level national conference to develop recommendations for government and industry. Recommendations included improvements to marketing, processing, product description, selling methods and production systems.

Fleece Measurement Service

Operated through the Agricultural Research Centre, Trangie, the service provided sheep breeders with greasy fleece weight and fibre diameter measurements for individual rams. At the start of the year, a fee of $1 per sample was introduced, and this was generally accepted by stud breeders. Although the number of samples processed during the year declined from 47 000 in 1981-82 to 32 017 in 1982-83, most of this reduction can be attributed to the severity of drought in the stud sheep areas.

Meat Sheep Sire Testing Service

This service operated from the Agricultural Research Station, Cowra, under a grant from the Australian Meat Research Committee which will continue until 1986. It provides breeders of British breed sheep with growth rate and fat depth measurements for live animals. This was the second full year of operation, and data were collected from a total of 9000 rams from 86 studs. About 75 per cent of the major short wool studs used the service.

Ovine Brucellosis Accredited-Free Flock Scheme

At 30th June 1983, 563 flocks of 19 breeds were accredited: 50 per cent of Dorset studs in New South Wales; 30 per cent of British breed studs; 25 per cent of Corriedale studs; and nearly 10 per cent of Merino studs. Following consultation with producers, the scheme was revised to make it more attractive to owners of larger studs, without reducing disease control. The Stud Merino Producers Association endorsed the revised scheme, and testing activity in the breed increased.

Research

An investigation was conducted into various factors inhibiting wool growth of pregnant or lactating ewes. The annual fleece production of ewes bearing and rearing lambs was 10 to 15 per cent less than for dry ewes, with most of this reduction apparently occurring during late pregnancy and early lactation. Although adequate nutrition and good management of the pregnant/lactating flock was found to prevent "tender" wool, it was only possible to marginally influence wool production.

A new specialised dam line (Hyfer) with improved reproductive rate and an extended breeding season, was further developed. These sheep should improve nett reproductive rat

Modern technology now allows fat depth to be measured without slaughtering or surgery.

and the reliability of spring matings for prime lamb production, particularly where good pastures are available.

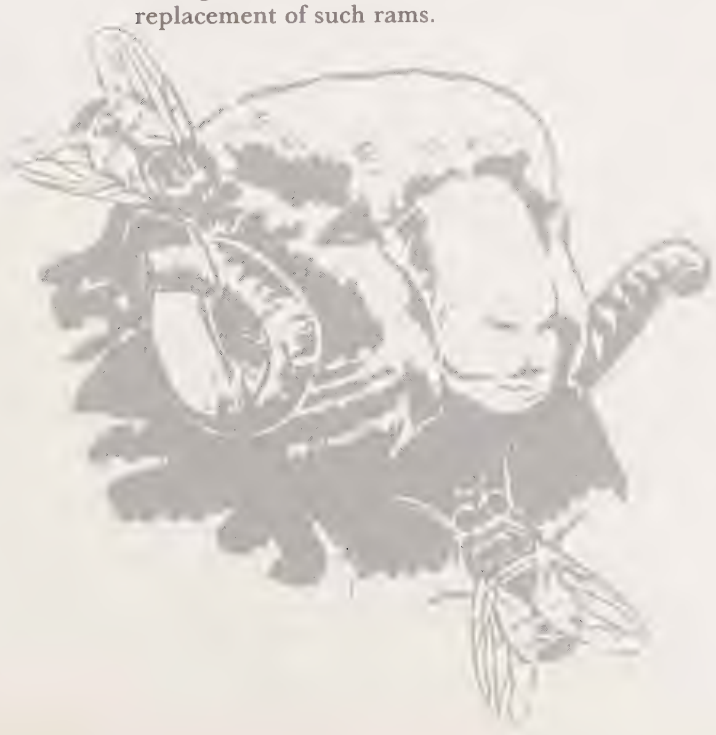
Evaluation of the Border Leicester Improved line is near completion. This line has about 88 per cent Border Leicester inheritance and 12 per cent Merino inheritance. The flock is intended to be used either to improve the reproductive performance of existing Border Leicester flocks, or as an alternative to Border Leicesters as sires of "first cross" ewes.

Real-time ultra sound technology was further developed and evaluated as a method of estimating the litter size of pregnant ewes. The diagnosis of litter size "in utero" will enable farmers to divide their ewes into non-pregnant, single foetus and multiple foetus groups. Each group can then be provided with the appropriate feeding and management to obtain a significant improvement in the survival of multi birth lambs.

The possible effects of increased dietary fluoride levels upon both Border Leicester X Merino crossbred ewes and their lambs were investigated. This mineral was chosen because of the known adverse effects of chronic fluoride toxicity and of the many possible sources of this mineral in the diet of ruminants.

The reproductive performance of mature Merino ewes was found to decline if the ram percentage was allowed to fall below 1.0 per cent. Flock reproductive performance will also be reduced if the proportion of rams exceeds 3 with 200 ewes, 4 with 300 ewes or 5 with 400 ewes.

A meter which accurately measures the sexual activity of rams was developed. Since about one third of all rams tested were found to be sexually inactive, the use of this inexpensive meter will improve reproductive performance through the early identification and replacement of such rams.



Sheep Health

Blowfly strike and fleece rot are probably the most important diseases of sheep, and cost New South Wales an estimated $40m per year.

Departmental research is directed to ensure that effective insecticides are available to protect sheep against the sheep blowfly, *Lucilia cuprina*. The Biological and Chemical Research Institute, Rydalmere, is the Australian centre for the diagnosis of resistance in the sheep blowfly. Studies carried out there on the genetic and biochemical causes of resistance provide data essential for the evaluation of both registered and experimental insecticides.

Blowfly strike occurs in two major forms, crutch and body strike. Much departmental work has been done on crutch strike, and the problem can be overcome by the use of appropriate management practices. However, body strike remains a major problem. A predisposing condition for body strike is fleece rot, which occurs in susceptible sheep under certain weather conditions. Fleece rot is caused by a bacterium, and the Department has a major project underway to determine the factors influencing the proliferation of these bacteria on the sheep's skin, and on the immune response of the sheep. The ultimate aim is the development of a suitable preventative vaccine.

Ovine footrot constantly threatens the efficient production of wool and sheepmeat. Producers recently requested the formation of a new footrot protected area, but rather than impose further regulatory controls, the Department started development of a major advisory programme. This will feature plans for the detection and control of footrot by traditional means, including recent advances in foot bathing and vaccination.

Johne's disease, previously unrecorded in sheep in New South Wales, has been diagnosed on six central tablelands properties. An incurable disease, it usually causes annual losses of less than 5 per cent, but one property experienced a more serious outbreak. Intensive studies were started to improve diagnostic procedures and to study the method of spread. The disease has been recognised for many years in this State in cattle and more recently in goat flocks.

Pestivirus in sheep causes a wide range of diseases grouped together under the heading "border disease". Field observations indicated that the disease is widespread, but that in most flocks it affects few sheep. Epidemiological research is in progress.

Beef Cattle

Trends in the Industry

Drought caused a further nine per cent reduction in beef cattle numbers, leaving 4.518 million beef cattle in New South Wales at 31st March 1983. Because of the length of the drought, most beef cattle producers received little or no income for several years, and were also faced with the substantial cost of purchasing drought fodder. Consequently, most producers attempted to generate some cash flow by selling stock for slaughter as soon as they were ready for market. This, together with a calving rate depressed by the effects of the drought, will restrict producers' ability to increase herd numbers. A further small decline in total cattle numbers may occur during 1983-84. The low level of cattle numbers, and the need to increase herd sizes, will lead to continuing low abattoir employment and difficulties in meeting export beef contract commitments.

Beef continued to be the most popular domestic meat, but competition from other meats and general tightening of the domestic economy eroded beef consumption. Because of the reduced production this should not cause an immediate problem.

Unpredictable fluctuations in prices received by beef producers remained a major problem. This, together with the inherently slow production cycle, makes long-term planning difficult and impairs the industry's ability to quickly adapt to change. During the year several proposals to increase the stability and viability of the industry were raised and discussed, but owing to the complexity of the beef industry and the perishable nature of the product, the problem was not resolved.

Producer organisations and the meat trade disagreed on the period of withdrawal of food and water (curfew) before liveweight sales. Following a request from the Livestock and Grain Producers' Association, the Department convened a Livestock Selling Consultative Group which will formulate an acceptable code of practice for the beef industry.

Advisory

All beef cattle advisory officers were heavily involved in providing drought feeding management information. The widespread drought also led to some lessening of advisory activities in major beef cattle breeding and management programmes. However, the Department's "improved methods of marketing slaughter stock" programme retained the high interest of all sections of the beef industry. One main part of this programme was to teach live cattle appraisal skills required for improved marketing systems such as sight-unseen selling. During the year, a total of 19 livestock appraisal courses were held for beef cattle producers and livestock agents. A large number of these courses also included sheep. Advisory officers also closely cooperated with the University of New England on an Australian Meat Research Committee funded project developing improved sight-unseen selling systems.

The Department's beef cattle crossbreeding project at Grafton generated much information supporting the economic advantages of crossbreeding for commercial beef production. These advantages allowed individual producers to reduce production costs through improved productivity per unit area of land. Advisory programmes were started, to acquaint beef cattle producers with the important role of crossbreeding for beef production.

As computer technology advances and becomes less expensive, it is becoming available to producers to more accurately plan the most profitable long-term production strategies. As these strategies include the integration of beef production with other on-farm enterprises, several advisory officers are developing skills in farm budget forecasting using computers.

Research

An experiment showed that cattle growth rate can be improved by careful selection of breeding stock. The experiment compared a randomly selected control population with lines selected for increased, and decreased, growth rates. To date there are only minor changes in the shape of the animal associated with changes in growth rate.

Considerable progress was made in implementing and adapting to local conditions the overseas developed BLUP (Best Linear Unbiased Predictor) evaluation technique. BLUP will be used to upgrade the analytical capabilities and field services of the National Beef Recording Scheme by providing more accurate and reliable estimates of the breeding values of individual animals. This is an outstanding example of overseas technology being not only imported and implemented, but also substantially modified and improved by Australian scientists.

Rapid progress was made in developing a small, inexpensive, permanent electronic data capture and storage device to provide identification and management information for individual animals. Different devices can be either attached to or implanted in an animal, and a specially developed radio unit used to interrogate the devices from up to 30 metres away, even when animals are standing together. There are many potential uses outside the beef industry for this miniaturised system.

Studies of winter feeding protein supplements to heifers produced substantial increases in heifer liveweights, and in the number and weaning weight of calves born to cows grazing native pastures on the north coast.

Hereditary Diseases

Work on the hereditary disease mannosidosis in Angus cattle was largely completed. Analytical procedures developed at the Central Veterinary Laboratory, Glenfield, and cattle testing organised by the Angus Society of Australia, almost eliminated the disorder from Angus.

Continuing studies of two other hereditary diseases included diagnostic procedures for the detection of carrier animals. The first disease, neuraxial oedema in Polled Hereford cattle, results in the birth of calves with nervous disorders causing death. The second, haemophilia, has been detected in Hereford herds which annually lose up to 5 per cent of their male calves following castration.

Cattle Tick and Tick Fever Control

Control of cattle tick within the infested area of north eastern New South Wales is the responsibility of the Board of Tick Control, under the jurisdiction of the Department. The Cattle Tick Control Commission was disbanded during the year.

Cattle tick infestations: Only 25 tick infestations and one tick fever case (where ticks were not found) were reported during 1982-83. This compares favourably with 1980-81 (42 infestations and one tick fever outbreak); and with 1981-82 (37 infestations and one tick fever). In 1982-83 there were only two infestations in the dipping areas, with 23 (and one tick fever) in the non-dipping areas.

Progressive release of areas: The Board recommended release of West Cullendore, but under surveillance for one year before full release. North Tabulum and East Cullendore will remain as separate areas, and their future will be reviewed before 30th June 1984.

Introduction of Queensland cattle: Conditions were simplified by eliminating the transmission test for tick fevers. Cattle now undergo sterilisation treatment by veterinary practitioners in clean country in New South Wales before entering the Tick Quarantine Area. The changes will drastically reduce the time taken for this programme to about four weeks, and will cut the cost.

Promacyl breakdown prevented: During 1980-81 and 1981-82, the promacyl in 107 out of 288 dips broke down under bacterial action to form dangerously high levels of the toxic by-product promecarb. These dips had to be denatured with lime, pumped out and recharged.

Triple superphosphate was added to create a buffered medium of pH 5.0 to inhibit the growth of the bacteria, but breakdown still occurred. Towards the end of 1981-82, pH was lowered to 4.5, dips remained operational, and it was unnecessary to pump out and recharge any dip. No promecarb toxicity was seen in 1982-83.

New cattle tick control programme: On 21st January 1983, the Minister for Agriculture and Fisheries announced that a new programme would start on 1st July 1983. The new policy provides for:

- stock owners to be responsible for control of ticks on their stock;
- dipping to be voluntary;
- one compulsory full herd examination between February and March each year, over the whole Tick Quarantine Area;
- quarantine of infested herds, but none for adjoining holdings;
- the Tick Quarantine Area boundary and Queensland border controls to remain;
- transfer of dips to stockowners to commence after 30th June 1984; and, for
- the Department and the Board of Tick Control to provide advice and assistance to stockowners on tick control.

A major advisory programme was developed to ensure that all were aware of details of the new cattle tick control programme.

Tuberculosis Eradication Campaign

The resurgence in bovine tuberculosis (TB), noted in 1981-82, was brought under control during 1982-83. This was achieved by increasing the area that is herd tested around infected herds. Some herds which had experienced TB infection in the previous 10 years were also check-tested. This activity will continue in 1983-84. The overall number of TB reactors declined markedly, and the number of infected herds declined from 21 to 15 during the year.

The period between TB tests in infected herds was increased from two to three months, to reduce the possibility of desensitisation by frequent TB testing. This increased the length of time that individual herds remained in quarantine, but was an extra safeguard in clearing herds of infection.

Details of herd status and regulatory activity are shown in Appendix II.

Brucellosis Eradication Campaign

A major milestone was achieved in the Brucellosis Eradication Campaign in March 1983, when the whole of New South Wales

was declared provisionally free of bovine brucellosis. This was more than a year ahead of schedule, and all cattle movement restrictions were lifted except for cattle from quarantined and provisionally clear herds.

The prevalence of brucellosis continued to decline in 1982-83. Progress over the last six years as recorded on the Australian National Disease Information Service (ANADIS) computer is shown below.

Brucellosis prevalence in New South Wales 1977–1983.

Date	(30th June)						
	1977	1978	1979	1980	1981	1982	1983
Herd prevalence (per cent)	29.5	10.1	9.75	4.78	1.31	0.49	0.23
Cattle prevalence (per cent)	3.1	1.3	0.21	0.17	0.66	0.03	0.01
Number of known infected herds	8 983	6 949	3 446	2 081	644	262	125

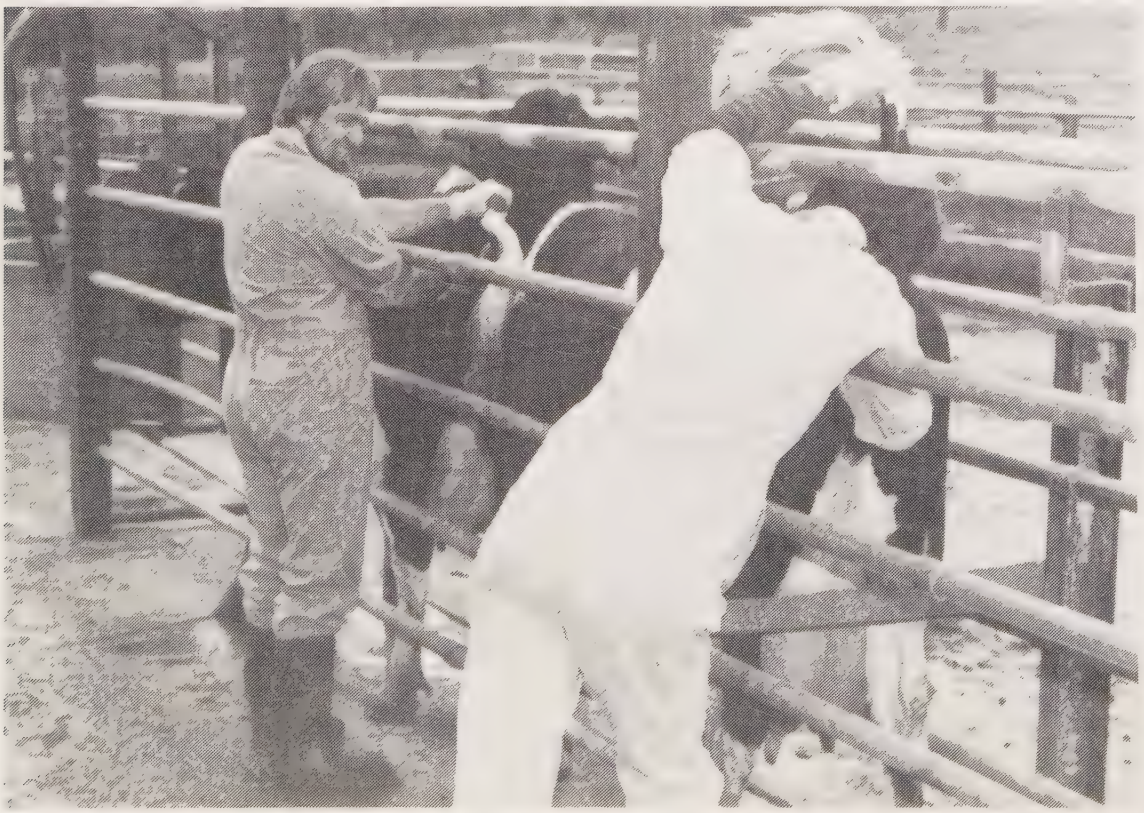
Details of progress in herd status and regulatory activity are summarised in Appendix II, and details of serum sample testing over the past seven years are contained in Appendix I.

In 1982-83, field testing of over 1.3 million cattle involved over 23 000 property visits and the testing of over 18 000 herds.

Investigations into infected herds or herds experiencing possible breakdowns were greatly intensified. Increasing use was made of bacteriological culture to define whether reactor cattle were actually infected with *Brucella abortus*. As well, a new serological test, the ELISA test, was introduced at the Regional Veterinary Laboratory, Wagga Wagga, in a pilot scheme. This test proved successful in detecting many culture-positive carrier animals which were negative to other

Penny Cook, star of *A Country Practice*, kindly donated her time to film some community service announcements for the brucellosis eradication campaign.

More than 1.3 million cattle were tested for brucellosis during 1982–83.



serological tests. The ELISA test will be introduced into the other four regional veterinary laboratories in the coming financial year.

When an area attained provisional freedom, vaccination with Strain 19 was prohibited except with the approval of the Chief, Division of Animal Health. Thus no routine vaccination was carried out after March 1983. A further three herds were vaccinated with reduced dose (1/400) Strain 19 during 1982-83, bringing the total number of herds thus vaccinated to 58. Monitoring of the progress of eradication in these vaccinated herds continued. The vaccine appeared to be very useful in aiding eradication of brucellosis from these problem herds.

Extensive advisory work supported the campaign. Emphasis was on keeping disease-free herds "clean", rather than on ridding infected herds of brucellosis.

Cattle owners and the industry were kept informed of progress, largely through farmer newsletters and leaflets distributed by staff when testing cattle. Further posters were produced, encouraging farmers to buy brucellosis-free cattle.

A major awareness campaign was planned for 1983-84, to guard against the dangers of cattle owners becoming complacent about possible risks of brucellosis at this advanced stage of the Brucellosis Eradication Campaign.

Dairy Cattle

Trends in the Industry

The number of registered dairy farms fell about three per cent to 3005 during 1982-83 — the lowest annual rate of decline for many years. The relative stability in farm numbers was due partly to milk quota distribution policy and the entry of 74 new dairy registrants into the industry. Total approvals of new registrations since the policy was introduced in October 1981 reached 141, 77 of which commenced supply.

Dairy cow numbers fell to 276 000 during the year, reflecting a similar rate of decline to dairy farm numbers. In recent years, there has been a general trend towards increased herd size on New South Wales dairy farms. Average herd size (including milking and dry cows) was 91 cows as at February 1983, with almost two thirds of New South Wales herds falling within the range of 81 to 200 cows.

Milk production totalled about 904 million litres, a rise of almost four per cent over the previous year's figure. About 62 per cent of the State's milk production was used as market milk.

Farm Milk Quality

The chemical and bacteriological quality of farm milk was even more satisfactory than in the previous year. The volume of milk which passed all acceptance tests represented 99 per cent of the total milk intake for the year. There were marked improvements in milk filtration test results, with 25 per cent fewer failures in sediment test due to 39 per cent fewer tests showing the "yellow stain" defect. The Department's inter-regional programme on farm milk quality assurance was a major contributing factor in maintaining quality at this most satisfactory level.

Dairy Herd Improvement

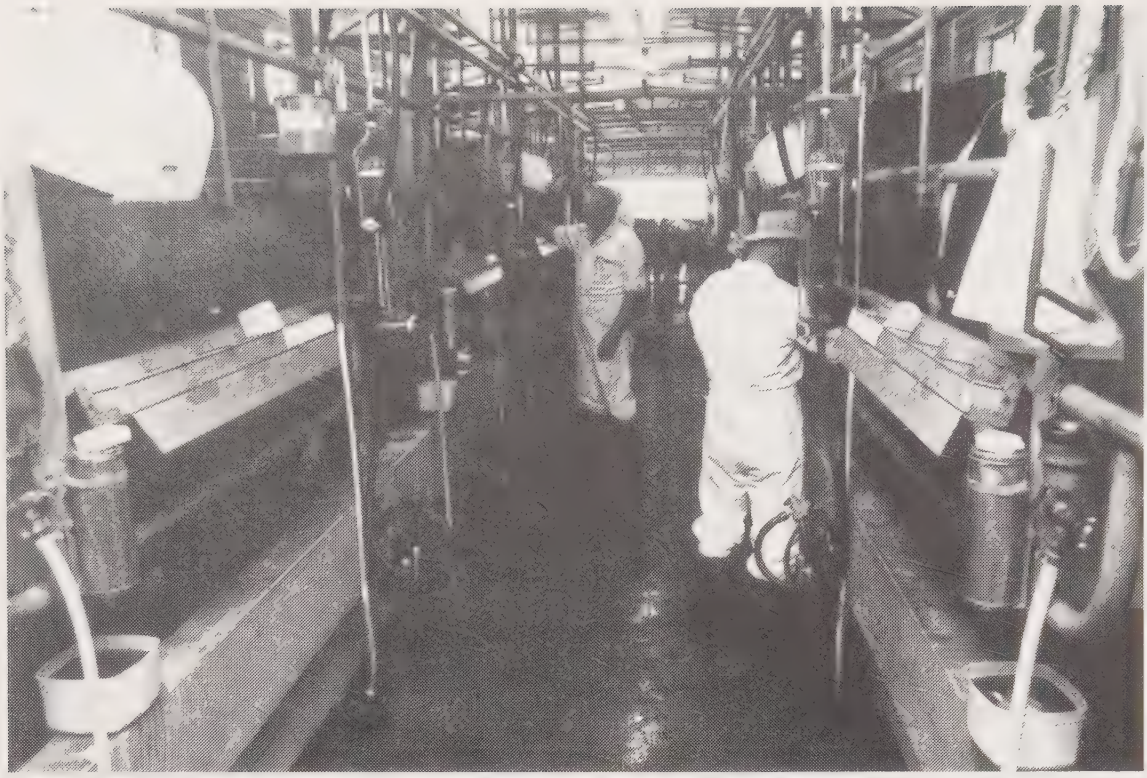
Management of the Australian Dairy Herd Improvement Scheme will be transferred to the Australian Dairy Farmers' Federation on 1st July 1983. This scheme calculates breeding values for cows and bulls, using national herd recording information. The Department is represented on the advisory committee which will recommend the operating policies of the scheme.

The first breeding values available for bulls, known as Australian Breeding Values (ABVs), were published in March 1983. Holstein-Friesian, Jersey and Illawarra bulls located at the Artificial Stock Breeding Centre, Berry, were prominent amongst the better bulls available throughout Australia. The first ABVs for cows are expected to become available during early 1984.

Departmental advisory programmes successfully increased the farmer participation rate in the Dairy Herd Improvement Scheme to 30 per cent. However, this rate of increase may be reduced due to the halving, from 60 per cent to 30 per cent, the Government contribution towards herd recording expenses. The Department is attempting to obtain increased financial support for the scheme from the dairy industry.

A total of 78 020 cows were submitted for herd recording during the year. This was the highest number recorded since 1973, and reflects the increased awareness by farmers of the importance of including herd improvement in their farm management programmes.

The Department continued to provide semen and liquid nitrogen services to most of the



New South Wales milk production in 1982-83 was about four per cent more than in the previous year.

State's coastal dairying regions. During the year, the 2000th participant in the "do-it-yourself" insemination instruction programme was trained by Artificial Stock Breeding Centre staff.

A major development occurred in the operation of the Holstein-Friesian herd improvement programme. Semen from the Department's Artificial Stock Breeding Centre was exchanged with semen from the Victorian Artificial Breeders Co-operative. This semen exchange will provide a breeding link between the two programmes, which in turn will lead to more reliable ABVs for Holstein-Friesian bulls. The cooperative Illawarra breed herd improvement programme operating between New South Wales and Queensland was enlarged to include progeny testing herds in Victoria and South Australia.

Mastitis Advisory Service

This Service is operated jointly by the Department and the Dairy Industry Marketing Authority to assist mastitis control in dairy herds. The bulk milk cell count (BMCC) provides an objective measurement of mastitis level at the herd, factory, district and State levels.

The average BMCC for 1982-83 was 440 000 cells per millilitre. Since there is a direct relationship between mastitis and loss of milk yield, the New South Wales yield loss in 1982-83 was about 970 000 litres per week. This is equivalent to an average annual loss of $2,200 per farmer (at $3.50 per kilogram butterfat). These results highlight the need for a continued effort by farmers to control mastitis, and the importance of constant monitoring by the Department. The Bulk Milk Cell Count Competition continued as a means of publicising the excellent results that can be achieved. Last year's State winner won the competition again this year, thus demonstrating that excellence can be maintained.

Other Diseases of Dairy Cattle

See *BEEF CATTLE* for information on tuberculosis, brucellosis, cattle tick and tick fever.

Research

Efficiency of supplement utilisation by dairy cows grazing sub-tropical pastures, and the relative importance of protein and energy are being investigated. Associated studies on the metabolisable energy content of foodstuffs, and the protein solubility of supplements are being conducted at Glenfield.

Improved fodder conservation techniques and studies on the effect of stress on milk production of ruminants are also directly relevant to the dairy industry.

Trends in the Industry

The steady expansion in all sections of the goat industry continued during the year. The Australian Bureau of Statistics recorded that there were 112 123 domesticated goats held by 1379 producers as at 31st March 1982 — an increase of 25 000 goats from the previous year. Few producers entered the industry, with most of the increase in goat population occurring on existing properties. The average goat herd increased from 65 to 81 head.

During the year, there was an increasing emphasis on large flocks for fibre production and/or weed control throughout the State. There was also a period of consolidation for some sections of the goat industry, particularly the amalgamation of the two major Angora breed societies.

An estimated 7000 milking goats were run on small holdings in and around large towns and cities.

New South Wales mohair production for 1982 was estimated at 40 000 kilograms, with an average gross price of $6.50 per kilogram. The Australian Bureau of Statistics records show 61 389 crossbred and purebred angora goats run for mohair production.

The cashmere industry is based on feral goats, many of which have the potential to produce high quality down. An estimated 40 000 goats were intensively selected and bred for cashmere production. During 1982-83, the main purchaser and user of cashmere established a price of $100 per kilogram for top quality Australian cashmere. Exports increased from one bale in 1981-82, to six bales in 1982-83.

The goat meat industry has always been based on the feral goat population, but with the increase in domesticated goats more goat meat is being produced as a by-product of other goat industries. During 1982-83, 1100 tonnes of goat meat, valued at about $1.7 million, were exported.

Advisory

While new producers still required basic information on a wide range of goat breeding and management subjects, there was an increasing need to provide specialist technical advice to the growing number of large scale commercial producers. Individual goat producer inquiries were serviced by existing district livestock advisors, with the support of the Livestock Officer (Goats).

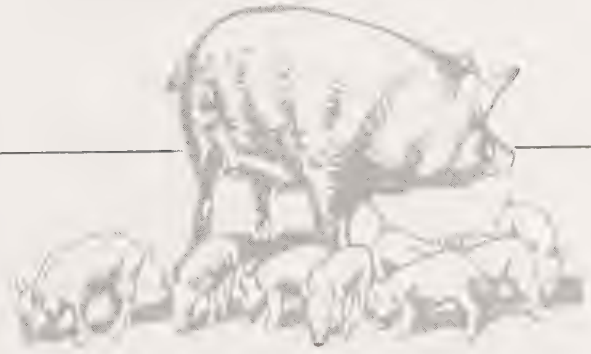
Two departmental officers accompanied industry personnel on a study tour of the Scottish cashmere processing industry. This provided an excellent insight into the processor requirements for cashmere. The Livestock Officer (Goats) was invited to address a major industry conference in Texas, which indicated the overseas recognition of the rapidly developing Australian expertise in all fields of goat production.

Research

The Department's major goat research activity based at Wollongbar emphasises selection and breeding of feral goats for cashmere and meat production.

The evaluation of goats as a management tool for weed control continued during the year, and some very promising management strategies were developed.

An investigation continued assessing the potential of local goat skins for quality leather production, and determining selection criteria for estimating the leather quality of live animals. Skin quality and skin utility are influenced by the physical structure of the skin and by skin damage, and there appears to be a direct relationship between the density of primary follicles and the grain fineness quality of a tanned skin.



Pigs

Trends in the Industry

Grain prices rose with the worsening of the drought in September 1982 and the granting of the drought fodder subsidy. Consequently, most prepared feeds were priced at more than $220 per tonne.

High prices were received for pigs until late January, and top grade bacon (60-70 kg dressed weight) brought $1.90 to $2.00 per kilogram. From February, prices dropped dramatically; and by June top grade bacon was down to $1.55 per kilogram. Only efficient units were profitable at that price, as the break-even price for pig production in June 1983 was estimated at around $1.60 per kg.

At 31st March 1982, there were 4703 piggeries with a total of 766 000 pigs including 93 000 sows and 7902 boars.

Sale by Description

During the year, 26 846 pigs were sold by description from a total of 31 489 pigs offered through 21 agents. In March 1983, the weekly sale was computerised with buyers bidding from terminals located at Homebush, Gunnedah and Dubbo. The exceptional participation by producers in this new system partly reflected the market collapse for consignment pigs in February/March 1983.

New South Wales Pork and Bacon Fair

The third Pork and Bacon Fair, held in Gunnedah in October 1982, attracted many pig producers from all parts of the State. The Department had a major input into the organisation of the fair.

Changes to Swine Branding Regulations

About 99 per cent of producers are registered with the new six digit brand. The changeover went relatively smoothly, with most producers now using the Pig Movement Notes.

Farm Management Recording Scheme

The Department developed a computerised recording scheme for producers which provides both financial and production information for their herds. Twenty producers are assisting with the pilot scheme before its official launching at the Pork and Bacon Fair in October 1983. The scheme is the most comprehensive available in Australia.

Stockfeed Analysis

Lysine is usually the first limiting amino acid in pig rations, and it is therefore important for producers to have a cheap, rapid method for its determination. A method was developed which uses automated high pressure liquid chromatography to perform more than 60 determinations in 24 hours. A similar method was also developed for the analysis of tryptophan.

Pig Health

A routine disease monitoring service for pig producers started in a further three abattoirs, at Byron Bay, Gunnedah and Mudgee. Information is provided to producers on 10 economically significant diseases. Producers are encouraged to use the information, along with post mortems and record analyses, to build up 'herd disease profiles' and allow them to institute better disease control programmes. The scheme provides excellent data on specific disease problems, and will later become the basis of veterinary pig health advisory programmes.

Mortalities and illthrift associated with campylobacteriosis were widely reported, and the disease is spreading. Colibacillosis and campylobacteriosis were the two most prevalent gastrointestinal infectious diseases in New South Wales pigs, taking the place of the older established diseases, salmonellosis and swine dysentery.

Research

A well attended pig research seminar was held at Dubbo in March 1983. Eight researchers sponsored by the Australian Pig Industry Research Committee presented papers. It is expected that similar seminars will be held annually.

Following the introduction of sale by description in New South Wales, there were producer complaints about the under-estimation of carcase backfat depth by some ultrasonic devices which resulted in price penalties for carcase mis-description. An investigation of the accuracy of five different ultrasonic backfat measuring devices found that only two provided reliable backfat estimates when correctly aligned on the live pig.

Nutritional studies included research into the utilisation of free lysine in both barley and wheat based diets by growing pigs, and into various factors influencing the availability of lysine in the major protein concentrates used by the Australian pig industry. Other studies indicated a potential benefit from the use of synthetic tryptophan supplementation of sorghum–meat meal diets; and from providing at least half of the dietary sulphur amino acids fed to weaner and grower pigs in the form of methionine.

Industry-supported research is being undertaken on erysipelas. This economically important disease causes about one per cent of pigs to be totally or partly condemned at slaughter because of arthritis. The work is aimed at improved diagnosis and the development of an improved vaccine.

Encephalomyocarditis (EMC) is a serious disease causing death in pigs on the north coast of New South Wales. Extensive field studies were made on the epidemiology of the disease, and laboratory studies are continuing. The ultimate aim is to determine the best methods of eradication.

Trends in the Industry

Egg production: New South Wales contributes about 42 per cent of Australia's total egg production. In January 1983, there were 4.264 million hen quotas operating on 603 farms throughout New South Wales. The egg industry continued to be troubled by overproduction due to increases in efficiency by most farmers and the failure of a few to comply with quota restrictions. Corrective action was postponed pending the introduction of more flexible and effective legislation. (See *Egg Marketing Legislation*). The decline in per capita egg consumption over the last decade should be reversed by the Egg Marketing Board's advertising campaign, and by the fall in real egg prices.

Producers were caught in a cost price squeeze resulting from rising equalisation costs, depressed returns and escalating feed costs due to the drought. Consequently, farm incomes fell.

Many egg producers had surplus capacity due to previous quota cuts. Those who intended to remain in the industry tried to reduce their overhead costs by purchasing quotas at prices ranging from $15 to $17.50. There was no expansion, and very few farmers entered the industry.

Improvements in the genetic potential, nutrition, husbandry and management of flocks contributed to improvements in egg production efficiency. During 1982, the "average" flock produced 237 eggs per hen housed to 74 weeks of age; 40 per cent of their eggs were above 60 grams in weight; and they consumed 2.13 kilograms of feed per dozen eggs produced. (The conversion ratio of feed to eggs was 3:1).

Advisory

Advisory officers were involved in a variety of programmes related to the use of farm management records in planning and decision making; the economics of egg production; the relationship between shed temperatures, feed consumption and egg size; energy conservation; random sample layer tests; diet formulation; and feedstuff evaluation.

Residential workshops for egg producers, layer servicemen and poultry processors were conducted in association with Hawkesbury Agricultural College and the World Poultry Science Association.

The National Farm Management Recording Scheme and the Random Sample Layer Test continued to provide valuable information for planning and evaluating research and advisory programmes, flock replacement programmes, credit applications and marketing strategies.

Seasonal fluctuations in the supply of large eggs caused marketing problems which will worsen when surplus production declines. An

The 603 New South Wales poultry farms produced about 42 per cent of Australia's eggs.

advisory programme is underway to minimise the problem.

Poultry Meat Production

New South Wales produces about 45 per cent of Australian poultry meat. During 1982-83, about 90 million chickens were raised on 600 contract or company farms located in New South Wales. Three major integrated companies controlled about 80 per cent of the total production of chickens, turkeys and ducks.

The chicken meat industry was troubled by overproduction and surplus capacity, and generally, farm incomes fell. Adjustment was difficult due to industry competition, but some adjustment occurred through restricted chicken throughput and the transfer of some growers between companies.

Improvements in the genetic potential, nutrition, husbandry and management of flocks contributed to further increased production efficiency. The "average" broiler was marketed at 56 days of age at a liveweight of 2.2 kg and with a feed conversion ratio of 2:1.

Poultry Processing

Continued activity under the Poultry Processing Act, 1969, resulted in significant improvements in hygiene and construction standards within the industry, particularly amongst smaller processors. The new construction standards necessitated extensive upgrading of many plants — five of which were completely rebuilt.

Poultry Meat Marketing

The conditions of contract and the price setting mechanism provisions of the Chicken Meat Industry Act are under review. Poultry meat consumption increased by about five per cent during the year, to an estimated 20 kilograms per person. Sales of fresh chickens and chicken portions increased significantly, at the expense of frozen whole chickens.

Egg Marketing Legislation

Following a Committee of Inquiry report into egg production and marketing in New South Wales, new legislation was prepared that removed eggs from the Marketing of Primary Products Act. The new Egg Industry Act provided for the replacement of the New South Wales Egg Marketing Board by an Egg Corporation; and the establishment of a separate licensing committee to regulate quota legislation. It takes effect from 1st July 1983.

Research

The Department of Agriculture is withdrawing from poultry production research, and intends to concentrate its resources on poultry health and disease work. Some facilities will be retained at the Poultry Research and Advisory Station, Seven Hills, for random sample layer tests.

Industry research funds were received to support work at the Central Veterinary Laboratory, Glenfield, into the administration of a V4 Newcastle disease virus vaccine for chickens; and for work at the Biological and Chemical Research Institute, Rydalmere, into fly control programmes.

Selection studies investigated the genetic and physiological factors influencing feed efficiency for bodyweight gain. The feed efficiency research findings are relevant to all livestock species where the efficient production of edible animal protein is a major objective.

Experiments analysed during 1982-83 show that a new selection strategy using information from backcross populations could be an effective method of developing better lines from the stock available.

Two possible non-destructive methods for estimating egg albumen quality (an ultrasonic and an electro-magnetic technique) are being investigated. The most promising is the electro-magnetic technique.

Meat Industry

Trends in the Industry

Seventeen export abattoirs continued to operate with three, previously export licensed, killing solely for local trade. Slaughterhouses generally maintained, and in some instances increased, the number of animals slaughtered. See Appendix II for annual figures.

Meat Inspection Service

The State Meat Inspection Service carried out inspections of livestock and carcases, to ensure fitness of meat for consumption. Other functions included selection of lambs and hoggets at slaughter; hygiene supervision at abattoirs and meat processing plants; reinspection of meat introduced into New South Wales from interstate and New Zealand; supervision of loadouts of meat at abattoirs; inspection of knackeries, kangaroo depots and animal food processing establishments; and the collection and feedback of information on livestock diseases to field staff.

Further controls on pet meat were introduced under the Meat Industry Act, 1978 regulation to ensure meat unfit for human consumption did not enter human food channels. Staining of pet meat produced at abattoirs, knackeries and kangaroo depots was supervised by meat inspectors.

Animal food processors were also supervised to ensure that pet food was correctly handled and that hygiene standards were maintained. A marked improvement in operational standards at knackeries, kangaroo depots and animal food processing plants was achieved.

Transfer to the Commonwealth: The Commonwealth Government accepted the New South Wales offer to transfer the State Meat Inspection Service. (See *NSW MEAT INSPECTION SERVICE TRANSFERRED TO COMMONWEALTH*

Carcase Classification and Related Marketing Schemes

Abattoirs in New South Wales continued with trading trials coordinated nationally by the National Carcase Classification Supervisory Committee and its successor, the Working Party on Livestock and Meat. The trials further examined the feasibility of operating classification systems and related marketing schemes for beef, sheep and pig carcases.

During the year, the subsidisation of additional labour for the trials at Blayney and Homebush was terminated, but beef classification continued at Blayney. Special tickets were provided through a Commonwealth beef classification grant. At Casino, a modified form of beef classification was maintained by management as part of the service to abattoir users. Beef carcase classification for a major supermarket chain continued on a "user pays" basis at Dorrigo and Wyong, but ceased at Canberra.

Sixteen abattoirs provided the "P2" back fat depth measurement, the system adopted in the revised Export Trade Descriptions for pig carcases. Most of these abattoirs participated in the pig auction sale by classification, which was altered to a computerised bidding system during March 1983.

Measurements taken in classification procedures were monitored by the State Meat Inspection Service, which also monitored beef strip branding at 15 abattoirs.

Honey Industry

Trends in the Industry

The apiculture industry was further depressed by the continuing drought and a decline in real terms in honey prices and by-products such as beeswax and pollen. During this period, production costs continued to rise.

A meeting of the Industries Assistance Commission was planned for September 1983, to consider if and what assistance should be provided to the industry. In consultation with the industry, the Department is examining various schemes for setting up an organised honey marketing system.

Advisory

Advisory officers continued a variety of programmes relating to disease control, pollination, pollen production, genetic improvement and marketing.

Workshop on Apiculture

Standing Committee on Agriculture approved a Workshop on Apiculture, to be held at Hawkesbury Agricultural College from 18th to 22nd July 1983. The New South Wales Department of Agriculture will host this workshop, and an Organising Committee was established. This will be the first such workshop ever held by the apiculture industry.

Pests and Diseases

European wasp, a major pest of bee hives in Europe and New Zealand, is also present in New South Wales, and all nests reported to the Department were destroyed.

During the year, there was a decrease in the incidence of American foul brood disease, with only $14,936 paid in compensation compared to $16,708 in 1981-82. (See also *Research* in this section).

Quarantine

The Apiculture section head is overseeing the management of the Commonwealth Health Department's Eastern Creek honey bee quarantine facility. When fully operational, the apiary will permit imported queen bees to go into permanent quarantine, so that only the larval stages of the offspring will be released for propagation.

Legislation

Discussions were held with the industry, and steps taken to amend the Apiaries Act, 1916. The proposed amendments will be the first since 1944.

Research

Research carried out at the Central Veterinary Laboratory, Glenfield, in conjunction with the Atomic Energy Commission, Lucas Heights, and the apiary branch, indicates that cobalt 60 irradiation of beekeeping equipment effectively kills all American foul brood disease spores. A commercial beekeeper irradiated 1400 supers using this method during December 1982.

A commercial irradiation plant to treat diseased bee hives should become operational in New South Wales towards the end of 1983, resulting in considerable savings to the industry. All States are examining the feasibility of using cobalt 60 as a means for disease control, and overseas countries are interested in this outstanding research achievement.

The Honey Research Advisory Committee increased its contribution by $12,400 to $17,500 for the examination of viral diseases of honey bees in New South Wales.

General Pests and Diseases

Feral Pigs

Widespread populations of feral pigs present the greatest feral animal/exotic disease risk in New South Wales. An exercise at Willandra National Park, Hillston, looked at the problems associated with the control of feral pigs in relation to an outbreak of exotic disease. The exercise involved members of the Department's Divisions of Animal Production and Animal Health, officers from the National Parks and Wildlife Service, and local Pastures Protection Boards. The exercise was also attended by officers from the Australian Bureau of Animal Health, and interstate and Commonwealth representatives from the Vertebrate Pest Committee/Animal Health Committee working party on vertebrate pest control aspects of exotic diseases. A variety of control techniques were used and assessed.

Over the last five financial years, the State Government made more than $400,000 available to Pastures Protection Boards to encourage the control of feral pigs. The Department of Agriculture is also heavily committed to research projects aimed at improving techniques for controlling feral pigs; and to advisory services aimed at landholders carrying out their own control programmes. These Government initiatives were highly successful in reducing feral pig numbers, and in increasing landholder awareness of the need for on-going feral pig control programmes.

The Government did not make a specific allocation for feral pig control in the 1982-83 State Budget. However, because of the success achieved by the programme aided by the effects of the drought, $70,000 was allocated by the Department to assist Pastures Protection Boards in their feral pig programmes.

Rabbit Control

A pressure fumigator developed at the Cowra Agricultural Research Station proved to be extremely effective in reducing rabbit numbers. This device should be used with poisoning and as a follow-up to burrow ripping or blasting. It is ideally suited for use in areas inaccessible to ripping; where soil erosion could occur; where it is not practical to remove stock; or where poisoning is undesirable.

Compound 1080

The use of 1080 to control vertebrate pests such as wild dogs is strictly controlled, but until recently this control was hampered by the lack of a rapid, robust method of analysis. An ion-selective electrode technique was developed at the Biological and Chemical Research Institute to rapidly and effectively analyse baits.

Wingless Grasshopper

The outbreak of wingless grasshopper in the southern tablelands declined during 1982-83, after hatchings in spring 1982 which resulted in widespread high density infestations. However, drought conditions killed many young hoppers, especially during December. In districts which received marginal falls of rain during spring and summer, populations persisted until late in the season. Significant hatchings are expected in these areas in the coming season.

Despite high numbers of hoppers early in the season, little control was undertaken by landholders as there was insufficient pasture to justify the use of insecticides.

Australian Plague Locust

A major outbreak of the Australian plague locust occurred in the central western plains and Riverina during 1982-83. This outbreak, of local origin, was the result of successful breeding in the north central western plains during summer of 1981-82, followed by widespread hatching in spring 1982 throughout the outbreak area. However, survival of hoppers was low due to severe drought conditions, and relatively little control was necessary. Following fledging of survivors, some swarms were produced in early summer north west of Dubbo and north west of Temora, but because of the drought these failed to reproduce.

FISHERIES IN 1982–83

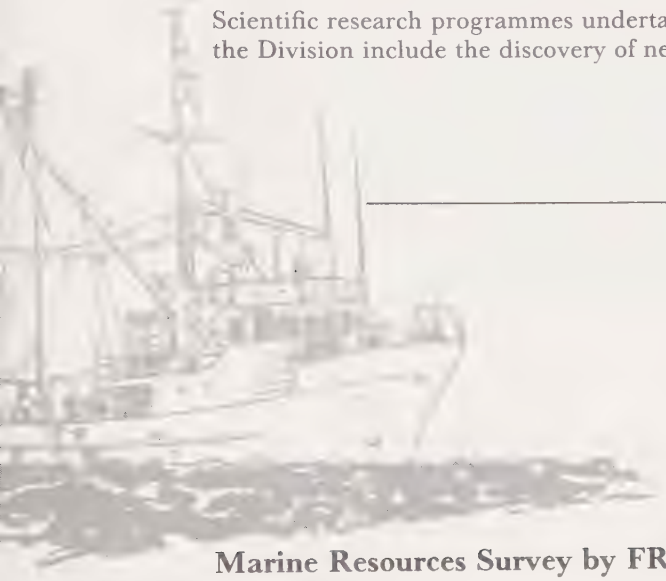
In March 1983, New South Wales State Fisheries was abolished as a separate Government Department, and became the Division of Fisheries of the Department of Agriculture.

The Division is responsible for protecting, developing and regulating the fisheries of New South Wales. Functions include marine and freshwater research; administration of the oyster industry; supervision of fish markets; licensing of amateur and professional fishermen; and cooperation with other authorities on fish and fisheries-related environmental issues.

Scientific research programmes undertaken by the Division include the discovery of new trawling grounds for commercial fishermen by Fisheries Research Vessel *Kapala;* and the artificial breeding of golden and silver perch perfected at the Inland Fisheries Research Station, Narrandera. The latter enables scientists and concerned anglers to restock many inland impoundments with native fish.

Regulation of both inland and marine fisheries is the responsibility of fisheries inspectors, who patrol inland and ocean State and Commonwealth waters assisting fishermen, and enforcing the law.

This section of the Annual Report lists the varied research programmes being undertaken, and the wide scope of the Division's other activities.



Saltwater Research

Marine Resources Survey by FRV *Kapala*

Deepwater trawling: All catch and length-frequency data from 1980 and 1981 were listed by computer, and preliminary processing completed.

Exploratory fishing for squid: Several large catches of small Gould's squid were taken off the far south coast of New South Wales during November and December 1982. Exploratory fishing was abandoned between January and May 1983 while *Kapala* was laid up for main engine repairs. Catch rates of squid off central New South Wales were lower than for the previous year.

Trawl measurements: Using the trawl telemetry system funded by the Fishing Industry Research Trust Account, measurements were taken on *Kapala* fish trawls rigged with Vee and polyvalent otter doors; the results indicated that both doors were equally effective. Measurements were also made on commercial gear from an Eden trawler.

Fish aggregating devices and submersible evaluation: *Kapala* was also involved in two other Fishing Industry Research Trust Account projects, the installation of fish aggregating devices, and evaluation of a small self-propelled submersible for underwater observation. See *Artificial Reefs and Fish Aggregating Devices.*

Danish Seine and Trawl Fish Research

This programme involves a study of the New South Wales offshore trawl and Danish seine fishery, designed to provide biological information on the important species being caught.

The length composition of the stocks, and catch per unit effort of the important trawled species, was monitored by sampling at the Sydney Fish Markets and at regional fishermen's cooperatives. Study of growth and mortality rates of red spot whiting, *Sillago bassensis,* from New South Wales waters was also started.

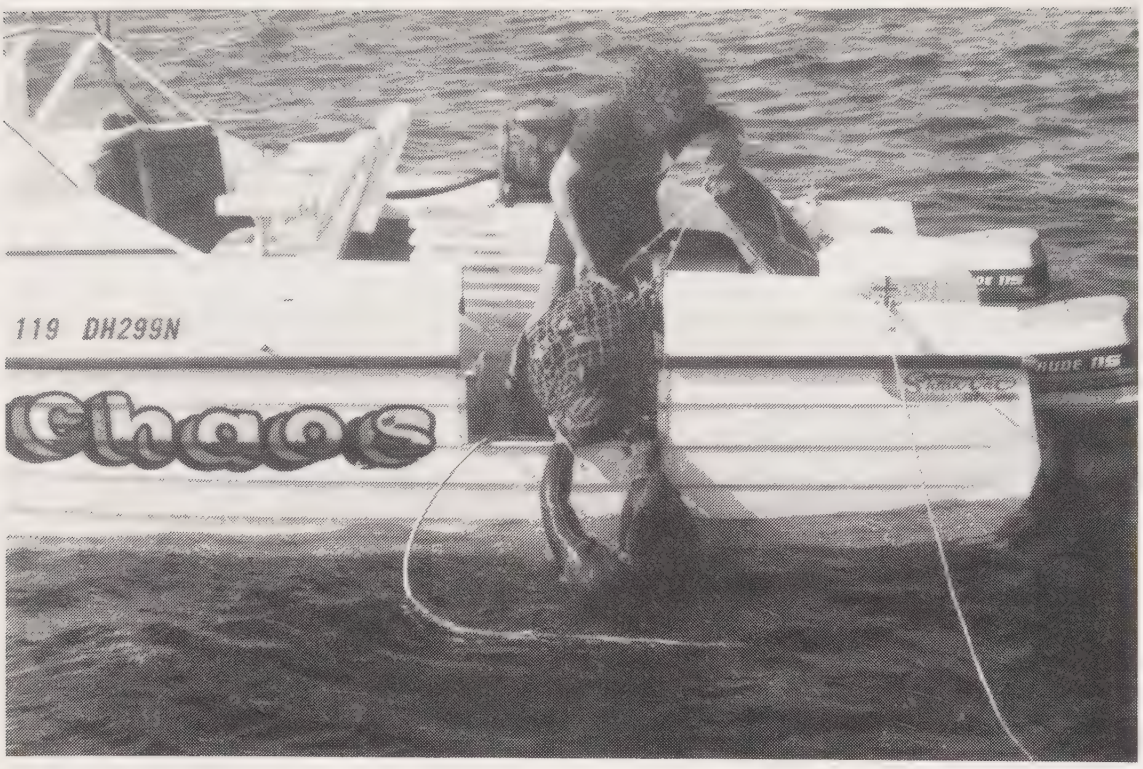
Fish tagged during the preliminary tagging study at Eden in October 1981 continue to be recaptured. At the end of June 1983, 95 tagged jackass morwong and 16 tagged tiger flathead had been returned. The results to date show only localised movement of these species. Further tagging was planned for the Eden area during 1983-84.

Abalone and Mollusc Research

Abalone: As predicted from high pre-recruitment levels, the total 1982-83 catch was well over 600 tonnes. However, a yield assessment for the fishery showed the long-term sustainable yield to be only about 600 tonnes per year. The present 59 divers working the fishery is too many; and the legal minimum length of 108 mm is well below the optimum minimum length of 115 mm.

Recruitment and catch monitoring continued, following management changes in 1980, and a review of catch and effort data was started.

Scallops: Jervis Bay scallop beds were surveyed on two occasions, and catch data from all scallop fishermen were edited and stored on computer pending a detailed analysis of the fishery. The total catch in 1982-83 was 1200 tonnes, compared with 2800 tonnes the



More than 600 tonnes of abalone were caught by 59 commercial divers off the New South Wales coast during 1982–83.

previous year. This was the result of no further recruitment to the beds, a common feature of scallop fisheries.

Monitoring of the beds will continue, to detect future spatfalls before the scallops reach the commercial size of 75 mm at two years of age.

Prawn Stocks and Crustacean Research

In 1983, experiments were conducted to determine the effects of tagging on mortality of eastern king prawn juveniles within the 20 mm to 30 mm carapace length range. Data from these studies are now being collated. Adult prawn stocks production continues to be monitored from catch information collected from various fishermen's cooperatives.

Collection of biological data on the eastern rock lobster was initiated. The information collected includes production data, size and sex composition of the catch, length/weight relationship, and the size at which breeding first occurs.

Artificial Reefs and Fish Aggregating Devices

The steel hopper barge *Verdier* was added to the offshore ship reef at Narrabeen, and two other barges were prepared for sinking.

The Narrabeen reef site was used for evaluation trials of two-man submersible *Platypus.* Several dives using the self-propelled submersible were made to inspect the sunken vessels comprising the reef. *Platypus* was able to carry out lengthy dives, but porthole visibility was restricted. This project, carried out in conjunction with *Kapala,* was funded by the Fishing Industry Research Trust Account.

Fishing aggregating devices (FADs) were placed off Port Stephens, Sydney, Jervis Bay, Montague Island and Eden to attract pelagic fish such as tuna and billfish, and to provide a focal point for commercial and recreational fishing. The FADs were all lost, and newly designed structures were under construction for installation during 1983-84. This project was also funded by the Fishing Industry Research Trust Account, and placement of the structures was carried out by *Kapala.*

Aquatic Reserves Programme

Investigation of selected natural underwater areas to be dedicated as marine and estuarine reserves for scientific, conservation, educational and recreational purposes continued. Appropriate management and conservation policies for these areas were being developed.

Effort was mainly concentrated on management strategy formulation. Included were further negotations with the National Parks and Wildlife Service relating to management of a major proposed marine park surrounding the Solitary Islands off the Coffs Harbour–Wooli area.

Land purchased by the Commonwealth for nature conservation purposes at Towra Point, Botany Bay, was transferred to the State for the creation of a terrestrial nature reserve. Discussions were held with the National Parks and Wildlife Service on management of the surrounding area of productive mangroves and sea-grass beds as an aquatic reserve for fisheries conservation (particularly as fish nursery habitat) and oyster farming.

Aspects of a number of other potential aquatic reserve sites, including Fly Point–Halifax Park, Port Stephens, were also investigated during the year, and tentative management proposals developed for several of them.

It is envisaged that each of the main marine and estuarine intertidal and subtidal types occurring along the coastline of the State will eventually be included in a comprehensive system of aquatic reserves and marine parks.

Conservation and Preservation of Aquatic Resources

The protection of amateur and commercial fishing grounds, prawn trawling grounds and oyster growing areas depends on the maintenance of a high quality aquatic environment, and the preservation and conservation of productive seagrass beds, mangrove swamps, salt marsh areas and natural shallows. Site inspections of major development proposals and environmental impact statements were carried out, and where necessary appropriate conditions placed on the development to ensure minimal effect on fisheries interests.

Estuarine Inventory Programme

This programme aims to provide a source of fisheries-related information to assist New South Wales estuarine management. The final stage of a mapping programme identified the tidal wetlands of all New South Wales estuaries. Estuarine wetland maps and fisheries statistics were made available to local authorities for planning purposes, and a series of regional technical reports was being finalised.

Estuarine Ecology Programmes

The known distribution of the oriental goby, *Acanthogobius flavimanus,* was extended when a number were caught in gill nets by biologists conducting regular sampling in the Parramatta River above Silverwater Bridge. All gobies were mature adults in spawning condition. It is believed that this species was introduced from overseas by years of ballast water discharge, and that it could become well established in New South Wales.

The transplanted mangroves in the Hawkesbury River showed highly variable growth rates. The survival rate for the initial 12 month period was a high 72 per cent.

Two new research segments were added to the estuarine programme. The first was designed to assess the long term effects of the August 1982 oil spill on Parramatta River mangroves, including previously transplanted specimens. The second research segment will assess the importance of amateur harvesting of cockles, *Anadara trapezia,* on the available stocks and the species' seagrass habitat. The recovery rate of heavily harvested cockle stocks will also be determined, following the closure of some seagrass habitat areas in specific estuaries.

Pond cages are used to monitor the effects of tags used on fish in other experiments.

Sydney Estuary Fish Research

An investigation of commercial and recreational fishing in the Sydney estuary was undertaken following complaints of fish depletion. The distribution and abundance of fish were examined by a routine fish netting programme. Recreational fishing was studied using the creel survey technique, while commercial fishing data were obtained from statistical returns and field interviews.

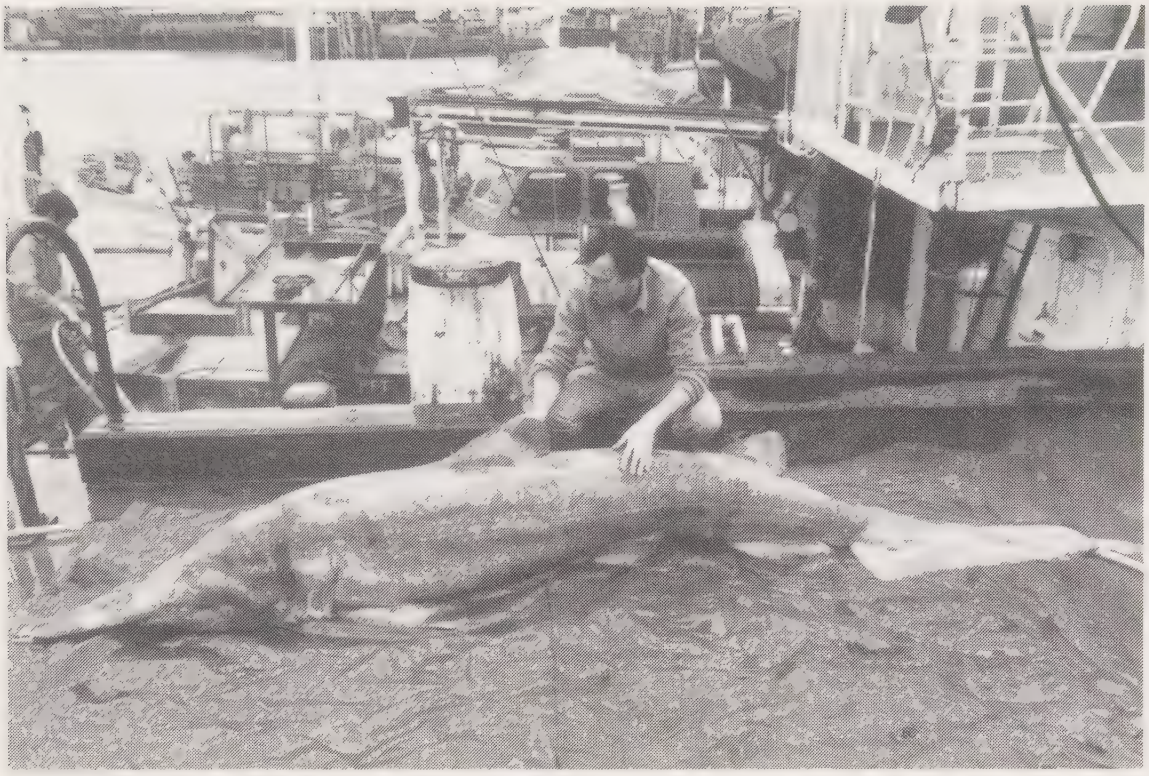
The main source of recreational/commercial fishing conflict concerned anglers' allegations that commercial fishing was depleting the fish resource. However, allegations of a depleted fish resource were not supported by data from this investigation.

The 12 month sampling programme resulted in the capture of 45 020 fish. The total fishing effort was 59.46 trawling hours, and the total fish catch per unit of effort was 757 fish per hour trawled. Both commercial and recreational fishing groups caught large numbers of fish. The 1980-81 commercial fish catch was about 108 000 kg, while the corresponding recreational fish catch was estimated to be about 164 700 kg. No long-term downward trends were evident from commercial fish production statistics, and the recreational fish catch rate in Sydney estuary was comparable with other Australian estuaries.

Lake Macquarie Finfish Survey

A two-year investigation of the fish and fisheries of Lake Macquarie was completed in July 1982, jointly funded by the Electricity Commission of New South Wales and the Division of Fisheries.

The principal objectives of the study were to provide an understanding of the fish populations and the commercial and recreational fisheries in the lake, and to evaluate the impact of power station development on them.



Netted at 525 fathoms by FRV *Kapala*, this 4 m goblin shark was only the second ever caught in Australian waters.

The good angler catch rate averaged 0.84 fish per angler per hour. The principal species in angler catches were snapper (17 per cent by number), tailor (15 per cent), trumpeter whiting (15 per cent), tarwhine (12 per cent), and luderick (11 per cent).

The commercial catch composition has generally remained unchanged for the last 25 years. Sea mullet was the dominant species, while tailor, luderick and yellowfin bream made up a large proportion of the catches. There was a general increase in total catch and catches of the main species during the last 25 years. Power station development around the lake does not appear to have had any deleterious effects on fish productivity, as measured by the commercial catch per man.

Tagging experiments on luderick and yellowfin bream above the minimum legal size, showed that there was extensive movement of these fish both within and out of the lake. Yellowfin bream tag recoveries outside the lake were at distances of up to 600 km. This suggests that yellowfish bream populations in Lake Macquarie and adjacent coastal waters are part of a continuous east coast stock.

Water Quality and Primary Production

Estuarine: A series of experiments was conducted on a 0.1 ha brackish water pond to quantitatively study the effects of added plant nutrients on phytoplankton growth. Results will be used to assess acceptable nutrient loadings on estuarine areas with little or no tidal flushing, such as coastal lagoons or canal estate embayments. It is also hoped to develop methods for growing algae as food for oyster spat, for use in a commercial oyster hatching and rearing operation. This work is being carried out at the Brackish Water Fish Culture Research Station, Port Stephens.

Inland: Further work on presentation and interpretation of water quality data continued, particularly for data from reservoirs and farm dams. Data processing is now entirely carried out on microcomputers.

Further work on documentation and analysis of data on residues of organochlorine pesticides and polychlorinated biphenyls in aquatic life continued.

Heavy Metals Programme

A major study of mercury and selenium levels in snapper from New South Wales waters was conducted. Results of the mercury content indicate general agreement with the latest proposed health standard for mercury. The selenium levels were well below the health limit and did not appear to correlate with the mercury levels in the muscle tissue of snapper. A scientific report of this survey was completed, and will be published in the near future.

A similar study on kingfish was completed, and results will be published in the near future.

Marine Angling Programme

The successful tailor tagging segment of this programme was terminated when sufficient repeatable information was obtained. The results are being prepared for publication.

The yellowtail kingfish, *Seriola lalandi,* and rock blackfish, or black drummer, *Girella elevata,* are the next species which will be tagged with the assistance of amateur fishermen.

A survey investigating the expenditure on amateur angling in New South Wales was completed, and a detailed report is in preparation.

Gamefish Tagging Programme

Again, record numbers of gamefish were tagged by volunteer anglers. The total tagged was 5785, over 1200 more than in the previous year. There were 174 recaptures reported in 1982-83, 67 more than the previous year.

The number of bill fish tagged was 1240, including 845 black marlin and 374 sailfish. For the first time, over 100 marlin were tagged in New South Wales waters in one year.

The highlight was the recapture of a black marlin by a Japanese long-liner in the central Pacific Ocean. It had swum 7200 km from its point of release in just under one year.

Market Measuring

A total of 39 845 fish and 15 494 crustaceans were measured for length at the Sydney Fish Market. The predominant fish species measured were gemfish, tiger flathead, redfish and jackass morwong. The predominant crustacean species measured were king prawns, school prawns and crayfish.

Biological data and other material were collected as required for scientific programmes.

See Appendix VII for seizures of fish.

Brackish Water Fish Culture Research Station

Research programmes: Research into oyster cultivation continued to be highly successful, and the results are being passed on to the industry. The next 12 months should give some indication of the viability of commercial prawn farming.

Reports of the capture of bass released in 1980-81 were received for fish ranging from 200 to 250 mm.

Research into the nutrition of young bass to improve survival economics will continue.

Bass Programme

During 1982, 102 000 bass fry were produced and stocked in various farm dams and impoundments. Captures of large bass were reported recently from impoundments stocked in earlier years.

Experiments were conducted to determine salinity and temperature ranges for the eggs and young prolarvae of bass, and various types of 'grow out' systems were tested. Research continued in the development of a reliable production system of food organisms.

Oyster Research

High density pond culture: Several types of upwelling units were built and tested as nursery units for spat. Basically, they consist of an upright cylinder with a mesh floor. Seawater is pumped up through the cylinder, partially or wholly fluidising the oysters so they tend to float. Although quite good growth of spat results from pond seawater, much better growth is obtained if the ponds are fertilised to increase algal production.

Currently, dense blooms of a dinoflagellate (possibly the genera *Prorocentrum* or *Exuviella*) are induced by adding 25 kg of ammonium nitrate, 25 kg of single superphosphate and 5 g of sodium molybdate to a 0.1 ha pond over one month. The cost of $15 for chemicals is low, and both spat and adult oysters feed readily on such blooms.

Hatchery oyster spat production: During the year, monthly batches of oyster larvae were successfully reared and settled on tiny scallop shell chips as single spat. These results indicate the feasibility of continuous hatchery-production of spat oysters. It also provides an alternative to the current labour-intensive process of nailing up sticks, tarring them, putting them out to catch spat, depoting, nailing out and culling. The first batch of hatchery-produced spat developed into well shaped, cuppy oysters marketable as first grade (plate) oysters at two years instead of at the normal three to four years. Recent batches of spat are being distributed amongst oyster farmers for growth trials.

Deepwater culture: Hatchery spat are ideal for deepwater culture since they must be laid out on trays, covered to prevent fish attacks and grown in areas where other oysters will not attach to them. Deepwater rafts and pontoons with small quantities of hatchery spat are now being used by oyster farmers in the Bellingen, Nambucca, Macleay, Camden Haven, Hawkesbury and Crookhaven rivers.

The procedure will be to produce hatchery spat in 21 days; boost spat growth in pond upwellers using algal blooms in two to three months; re-lay spat on submerged trays in holding ponds; transfer spat to commercial growing sites, racks, pontoons and rafts as required; and to produce disease-resistant fast growing oysters by selective breeding that will cut production time to less than two years for prime plate oysters.

Purification: When the 1st May 1983 deadline for the statewide introduction of compulsory oyster purification expired, 226 plants had been notified. The vast majority of these were operational, with the rest under construction. Plant and equipment designed for the industry and adapted for commercial manufacture were well received, and made a major contribution towards helping the industry meet the

deadline. No major problems arose in plant operation, and high standards were achieved and maintained.

Good liaison with the industry and other State and federal departments was established, which will do much to ensure continued success of the programme. Some problems remain with availability of permanent purification sites and introduction of the necessary regulations and monitoring procedures, but these are close to being resolved.

In general, the statewide programme of purification was achieved smoothly and in a remarkably short time. New South Wales can now boast not only more oyster purification plants than the rest of the world, but also to be a leader in the field in many cases.

Diseases: An international workshop on haplosporidan parasites in oysters took place at the Port Stephens Brackish Water Fish Culture Research Station from 18th to 20th November 1982, with participating parasitologists from New Zealand, France, the United States, Queensland, Victoria, the Australian Capital Territory and New South Wales.

Research on the haplosporidan parasite *Marteilia sydneyi* (QX) continued in Terranora Lake, with current experiments concluding in October 1983. The prediction service for growers continued as in previous years.

Algal culture programme: The routine provision of algal cultures to the oyster hatchery formed the major task of the unit. Algae and rotifers were produced for other research programmes as time permitted.

The development of a rotifer production method to provide food for early-stage bass larvae continued. Very high rotifer yields were produced in culture volumes up to 200 L. Larger semi-continuous cultures are still under trial.

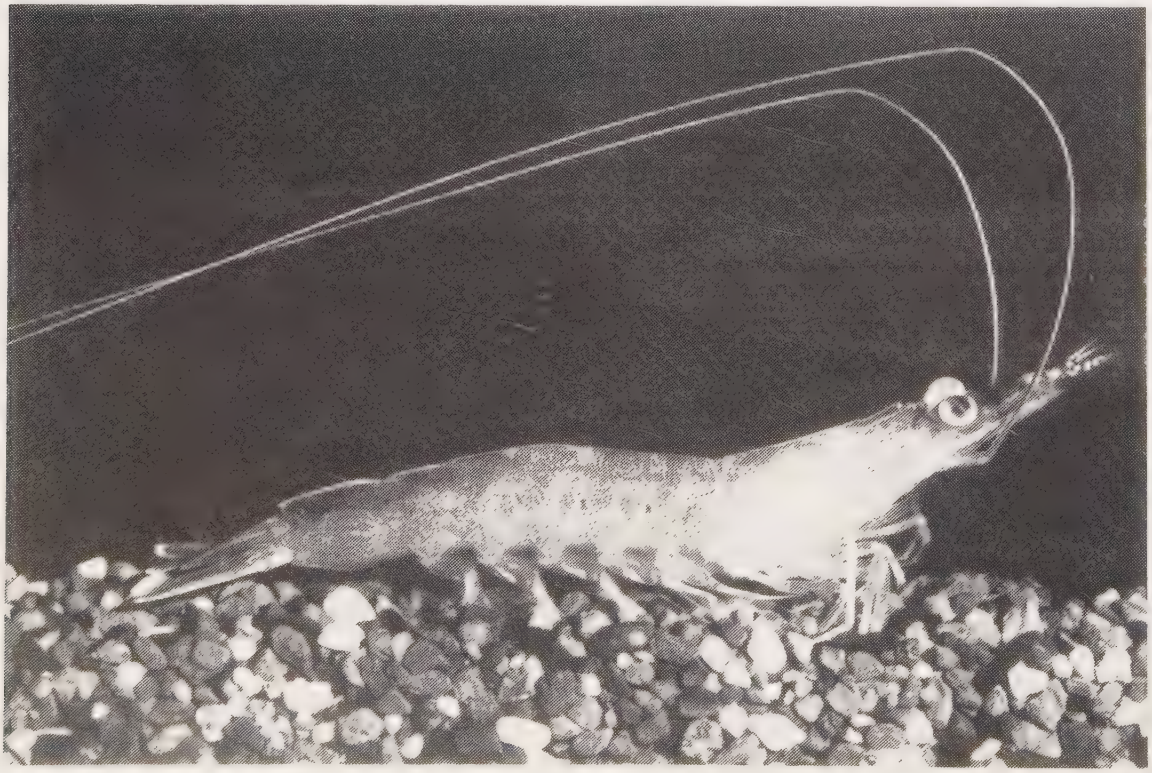
Nutrition: Traditional oyster fattening in estuaries is very slow and seasonal, so two new oyster fattening techniques were developed which are much quicker, and which may allow farmers to fatten oysters out-of-season. One consists of a comprehensive artificial oyster diet for fattening poor condition oysters in about six weeks. The other uses fertilised ponds to fatten oysters in about four weeks, as described under *High density pond culture.* No taste differences were found between oysters fattened on the artificial diet, in fertilised ponds, or in an estuary.

Prawn Farming

Highest priority was given to making the one hectare pilot prawn farming pond in the Clarence River area operational. This involved levelling the pond bottom; positioning pond overflow and drainage systems; developing and constructing paddle wheel aerators; installing and refining pumping systems; and setting up an on-site water chemistry laboratory.

It is proposed that the pond be stocked with juvenile school prawns to establish growth rates and yield per unit area in late 1983.

School prawn



Inland Fisheries Research Station, Narrandera

The First Australian Freshwater Aquaculture Workshop was held at Narrandera in February 1983. The week-long workshop examined the viability and prospects of the industry, and reviewed the latest research techniques and developments. It attracted 97 participants, and was a resounding success.

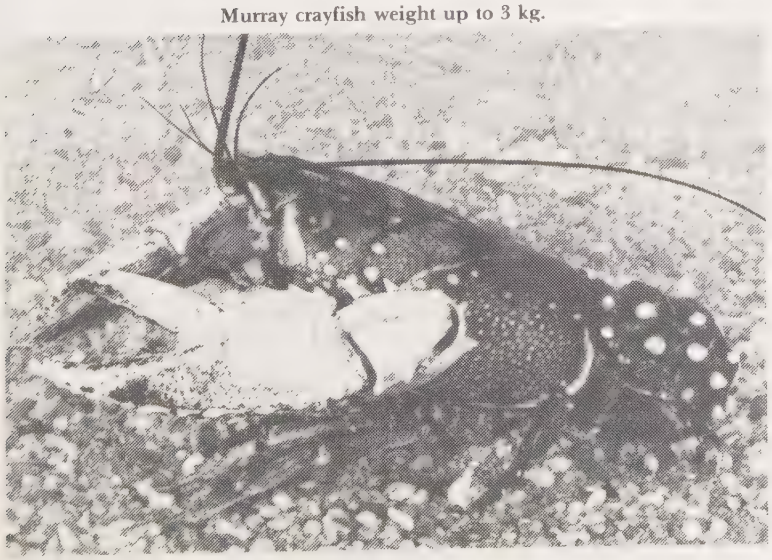
See Appendix VII for warmwater fish stocking since 1976.

Fish breeding programme: Breeding trials produced 594 940 fingerlings. Public stockings accounted for 450 975 fingerlings, and four fishing clubs purchased 56 000 fingerlings. The sale of fingerlings for stocking farm dams was handed over to commercial warmwater hatcheries.

Five impoundments were stocked with silver perch fingerlings: Berrima Weir, 32 300; Marsden Weir, 33 000; Googong Dam, 99 675; Lake Mulwala, 18 400; and Hume Weir, 86 400. Hume Weir also received 181 200 golden perch fingerlings. During the last five years, 24 impoundments in New South Wales were stocked with 2.4 million fingerlings.

Research in 1982-83 centred on defining larval rearing techniques for silver perch, and improving fry pond management. Breeding experimentation with the endangered Clarence River cod and Macquarie perch did not proceed, as the cod broodstock did not survive the coldwater temperatures of winter. Once again, the perch broodstock were susceptible to high summer water temperatures.

Murray crayfish weight up to 3 kg.



Murray River crayfish programme: Over 3000 Murray River crayfish have now been tagged in the Murrumbidgee River and in Khancoban and Jounama Pondages. Recaptures provided excellent data on growth rates, on the reproductive cycle in the river, and some preliminary data on crayfish movements.

Logbooks were distributed to 253 crayfishermen in 1982, 47 per cent of whom returned useful information. Logbooks were also distributed in 1983.

Trout Stream Survey

Streams stocked with finclipped brown trout included Kydra, Kybeyan and Coolumbooka Rivers (Monaro), Evans Plains Creek and Campbells River (central), Serpentine and Oakey Rivers (New England), Wollodilly River/Pejar Dam (southern districts). All the above rivers were sampled at least once during the year.

Flow in all rivers was either very much reduced or had ceased during the year. However, the flow in most improved following rain in May.

Some finclipped fish were recovered in the six month period since release. Further releases will be made in 1983.

See Appendix VII for details of inland angling licence fee increases.

Keepit Dam Survey

This study, financed on a three year grant from the Water Resources Commission, commenced in August 1981. Its primary objective is to investigate the potential impact of the proposed Split Rock Dam on the recreational fisheries in Lake Keepit and the Manilla River.

A creel survey was conducted at Lake Keepit from August 1981 to September 1982 to determine the magnitude of fishing pressure, the size of the fish catch, and other aspects of the recreational fishery. Fishing pressure was highest in spring, lowest in winter, and decreased with falling water levels. Angler success was highest in spring and late autumn. Five species of fish were caught, with golden perch, *Macquaria ambigua,* 87 per cent, and catfish, *Tandanus tandanus,* 12 per cent, dominating the catch. The mean weight of caught golden perch was 1.2 kg, and catfish 1.1 kg. Evidence indicates that Lake Keepit supports an excellent recreational fishery.

Biological information was collected during monthly sampling, and 1817 fish were tagged and released. To date, 36 fish have been recaptured by amateur anglers, and further tagging is planned.

No spawning migrations of golden perch were observed during the past 12 months, due to the prolonged drought conditions in the region.

A one year extension of the programme was requested following the apparent end to the drought conditions in June 1983.

Environmental Studies

A number of environmental issues, work on river improvement, flood mitigation and the installation of fish ladders, were investigated.

The obstruction of fish movements by dams, and the destruction of habitat by de-snagging operations, were discussed with other authorities, as were the problems relating to water abstraction from important streams.

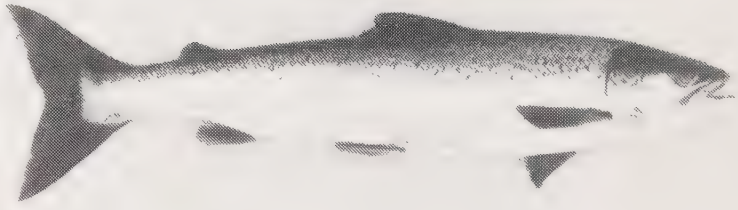
The development of techniques for assessing instream flow requirements for fisheries resources was continued through 1982-83. In addition to field surveys of habitat preferences of particular fish species, some laboratory experiments were carried out on velocity and depth tolerances for several species. This type of testing will continue to provide design criteria for fish ladders.

Hatcheries

Gaden Trout Hatchery: Due to abnormally high water temperatures in late November 1982, an early release of rainbow fry was imperative. The Central Acclimatisation Society decided that because of the drought-caused water shortage in its area, and doubt as to whether fry would survive the journey, its allocation of 184 000 could be released into the Snowy Mountain lakes.

The Thredbo River dropped to its lowest level since recordings commenced in 1975, but there was still sufficient water to maintain all hatchery operations.

One hundred Atlantic salmon brood stock were evacuated to the cooler water of the Guthega River, and the majority returned to the hatchery just before good rains in March. Rain was also received during May, and a very good run of spawning brown trout was recorded. Amongst the run of brown trout were a few "wild" Atlantic salmon from which some eggs were obtained and fertilised, but it is not yet known whether fish will result from these eggs.



About 1800 eggs were obtained from this "wild" Atlantic salmon trapped in the Thredbo River.

See Appendix VII for releases of fish.

Dutton Trout Hatchery: A total of 2 017 000 rainbow trout eggs was taken from hatchery brood stock and laid down, and 1 100 000 fry were supplied to the New England Trout Acclimatisation Society.

A total of 100 000 eyed rainbow trout eggs was supplied to the Walcha Trout Club, and 19 050 fry and fingerlings sold to private buyers. About 1650 excess brood stock were also released in streams in the area.

A total of 56 457 brown trout was released into Deer Park, Little Murray, Bangalow and Watercress Rivers. In addition, 20 000 finclipped brown trout were liberated into the Serpentine and Oakey Rivers.

See Appendix VII for releases of fish.

Other Activities

Law Enforcement

Fisheries inspectors combined with pure food inspectors of the Health Department in combating barramundi substitution rackets.

New South Wales hosted the 1983 Senior Fisheries Law Enforcement Officers' Conference at the Brackish Water Fish Culture Research Station, Port Stephens. There were representatives from all States, Territories and the Commonwealth.

The Law Enforcement branch was given access to the New South Wales Police radio network in case of emergency.

As well as vessels to patrol State and Commonwealth waters, the Division of Fisheries has smaller vessels to patrol ocean waters and sea beaches. During the year, three locally made twin hull reinforced fibreglass vessels were added to the fleet. These proved very efficient and cost effective in estuarine and ocean patrols.

See Appendix VII for prosecution statistics.

Information and Extension Service

The fisheries information and extension service designed and executed the Department of State Fisheries display for Fish Expo, in

September 1982. This event was attended by a wide range of fisheries connected groups from all over Australia. The theme of the Department's display was Fish as Food. Thousands of people attended Fish Expo, and many inquiries were received from the public regarding fish processing, and particularly fish smoking. Free samples of smoked fish were available from the stand.

The well established and very popular fishing clinics for children were continued in November and March. The newly developed adult evening classes held in September and May also proved very successful. The courses are conducted in conjunction with the Fishing Clinics Committee of the Amateur Fishermen's Advisory Council, and other amateur fishing organisations.

In February 1983, the service assisted in the organisation of the first Freshwater Aquaculture Workshop. This was held at the Inland Fisheries Research Station, Narrandera, and was attended by aquaculturists from all over the country. The papers presented at the workshop will be published in book form.

The navigation, radar, sonar and echosounder course for professional fishermen was held with the assistance of the service in April 1983. The course was held in conjunction with the Marine Navigation School of the Sydney Technical College. In addition, a short course on nets and netmaking was held in May, and both courses were well attended.

The information and extension service continued its close liaison with the Amateur Fishermen's Advisory Council, producing and distributing the Council's quarterly newsletter. A number of brochures were revised and reprinted, and several new publications added to the present range. The service also continued its on-going advisory function, supplying information on all facets of fish and fisheries in New South Wales.

Amateur Fishermen's Advisory Council

The Council is a statutory body constituted under the Fisheries and Oyster Farms Act, 1935, and is recognised by the Government as representing amateur fishermen in this State. The Council is made up of members appointed by the Minister from nominations put forward by prescribed amateur fishing organisations.

As at 30th June 1983, Council comprised the following members:

Mr. B. De Flon (Chairman) — NSW Amateur Fishing Clubs Assocation
Mr. G. Dowies, BEM — Australian Underwater Federation
Mr. M. Corrigan — NSW Amateur Fishing Clubs Assocation
Mr. A. Flint — NSW Institute of Freshwater Fishermen
Mr. B. Thompson — NSW Amateur Fishing Clubs Assocation

The children's fishing clinics encourage safety and responsible attitudes to fishing as well as teach the best ways to fish.

Mr. B. Jonassen — NSW Institute of Freshwater Fishermen
Mr. B. Dunn — Australian National Sportfishing Assocation.
Mr. M. Garnett — NSW Institute of Freshwater Fishermen
Mr. P. Goadby — NSW Game Fishing Association

Mr. W.J. O'Brien, MBE, who was the previous Chairman of Council retired in December 1982, along with Mr. S. Ryder. Council met with the Department on four occasions during the year.

New South Wales Association of Professional Fishermen

The NSW Union of Fishermen's Co-operatives Ltd. was dissolved, and replaced by the NSW Association of Professional Fishermen as the official body representing the fishing industry of New South Wales. Membership to the Association is open to all commercial fishermen, whereas previously Union delegates consisted only of members from the various district cooperatives.

Meetings between the Association and the Department were held on five occasions during the year to discuss matters affecting the interests of commercial fishermen.

Australian Oyster Farmers and Producers Association

The Australian Oyster Farmers and Producers Association is the official liaison body between the industry and the Department.

Meetings were held with the Association during the year to discuss oyster leases and the purification programme. Meetings of the Association's newly established export working group which explored the potential for oyster exports to Europe, North America and elsewhere were also attended.

Hatchery Managers Conferences

Hatchery management conferences were held on two occasions during the year. Representatives of the Monaro, New England and Central Acclimatisation Societies and several other amateur fishing clubs met with senior departmental officers to discuss issues relevant to hatchery management.

New South Wales United Abalone Divers Association

A meeting was held during the year between representatives of the NSW United Abalone Divers Association and the Department to discuss matters affecting the interests of commercial abalone divers.

Legislation

During the year 1982-83 the following provisions contained in the Fisheries and Oyster Farms (Amendment) Act, 1979, were proclaimed to commence:

Inland Angling Licences (Section 2(3)(f)).

These provisions modernised the inland angling licence provisions and created the additional offence of being in possession of fishing gear in, or on, or adjacent to inland waters without an inland angling licence. Appropriate amendments to the regulations were brought into force at the same time. See Appendix VII.

Amendments to Regulations

During 1982-83 the following amendments were made to the Fisheries and Oyster Farms (General) Regulations:

Regulation

116 — This regulation was amended to provide that, in measuring a rock lobster for the purpose of determining whether it is of prohibited size, the carapace, not the whole length, is to be measured. Reductions in the lengths for common rock lobster and southern rock lobster from 25 cm to 11 cm and from 28 cm to 11 cm, respectively, were made at the same time.

44-51A — New inland angling licence regulations were brought into force, replacing the former provisions, and a new form of licence (Form 21) was introduced. Consequential amendments to other regulations were also made.

14E — This new regulation prescribed the dimensions of traps permitted to be used in estuaries by commercial fishermen for taking eels. A consequential amendment to Regulation 14 was also made.

116 — This regulation was amended to reduce the carapace length for common rock lobster from 11 cm to 10.4 cm.

29 — This regulation was repealed and replaced to prohibit the use not only of monofilament nets, but also of all nets any mesh of which is constructed of synthetic material which comprises less than 7 strands.

14 — This regulation was amended to reduce the minimum mesh size of the netting in yabbie traps from 25 mm to 13 mm and to cover all netting, whether or not consisting of wire, used in yabbie traps.

182 — This new regulation prescribed the premises at which abalone taken for sale may legally be shucked, that is, have their shell removed.

122, 123 — These new regulations, replacing the former regulations 122-127, comprehensively revised the provisions dealing with returns by fishermen and others. Consequential and other amendments were made to Forms 49, 51, 52, 53B and 54; Forms 53 and 53A were repealed and replaced; new Form 54A was inserted and Form 57 was repealed.

14 — This regulation was amended to require fish trap buoys to be flagged and it prescribed the dimensions etc. of such flags.

During 1982-83 the Fisheries and Oyster Farms (Fly Point–Halifax Park Aquatic Reserve) Regulation, 1982 was made. This Regulation prohibited, with certain exceptions, the taking or disturbance of fish or marine animal life within the Fly Point–Halifax Park Aquatic Reserve at Port Stephens.

Legal Action

Offences found proved but summons dismissed due to extension by magistrate of Section 556A of the Crimes Act — 88

Summonses not served as police were unable to locate defendants — 91

Cases withdrawn or dismissed for insufficient evidence, by departmental request, or because first charge successful — 110

DEPARTMENTAL SERVICES

The Division of Animal Health is responsible for ensuring the health and related productivity of the important species of livestock, and for controlling scheduled diseases.

Disease prevention and control involved not only the resources of the Department of Agriculture, but coordination with other State departments and private bodies.

The principal Acts administered by the Division are: the Stock Diseases Act, 1923; Stock Foods and Medicines Act, 1940; Stock (Chemical Residues) Act, 1978; Stock (Artificial Semination) Act, 1948; Meat Industry Act, 1978; Cattle Compensation Act, 1951; Swine Compensation Act, 1928; Poultry Processing Act, 1969; and the Veterinary Surgeons Act, 1923. On behalf of the Commonwealth, the Division administered the *Quarantine Act* section relating to the importing and exporting of animals and the importing of animal products. For details see Appendix II.

The Division also supervised the 38 veterinary inspectors employed by Pastures Protection Boards.

Diagnostic Service

The number of specimen consignments to the Department's veterinary laboratories was about the same as in previous years, despite the effects of the drought on farming activities. Again, most submissions came from private veterinary practitioners, which reflects the continuing good cooperation between the private and public sectors in servicing the livestock industry. Details of the submissions are given in Appendix I.

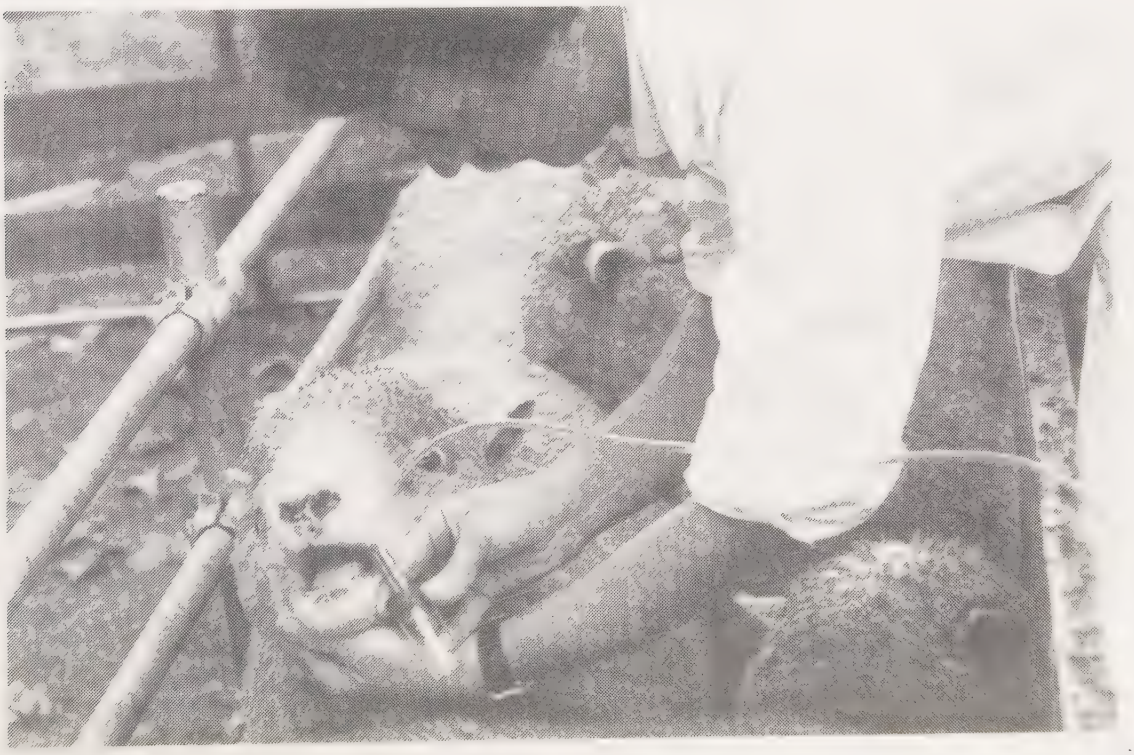
The Brucellosis Eradication Campaign progressed very satisfactorily, but a search continued for improved diagnostic procedures. As a result, two new diagnostic method refinements were developed and introduced. The first is the use of the ELISA blood test, which increases sensitivity and specificity compared to the standard complement fixation test. The second procedure is use of cultural examination of suspect animals to demonstrate a causal organism in a suspect cow. Such demonstration can often supplement the blood test results, and give definite evidence of infection in the herd.

Exotic Disease Control

The Inter-regional Liaison Committee, established to coordinate statewide animal health emergency preparedness, made a number of significant achievements through the year. These range from consolidated reprinting of the National Model Control Plans, through to the publication of draft Regional Contingency Plans.

Regionalisation of task forces improved planning and liaison at regional and local levels. Local community and government resources enabled development of special contingency plans that include the individual needs, likely threats, and available resources of individual areas of the State. At State level, there was increased involvement with central bodies of industry, State departments and federal organisations.

Collected saliva is used to determine stress effects and mineral nutrition levels in sheep.



Limited financial and human resources are being consolidated to ensure effective response to any animal health emergency in the long term. Disease alerts necessitated some diagnostic specimens to be taken: for example, Newcastle disease (aviary birds on the north coast); duck plague (duck farm on the south coast); and rabies (dog in a Sydney suburb).

New South Wales assisted with the transhipment of specimens from the pig disease alert at Humpty Doo in the Northern Territory. The State initiated only minimal responses, such as the tracing of pet meat and the restriction of some livestock, until the situation was clarified.

Animal Disease Monitoring System

The increasing demand for information on disease events highlighted the need for the animal disease monitoring system. The system will tie together information from abattoirs, laboratories and field operations and needs inputs from other parts of the Department.

An inter-divisional team completed a feasibility study and an initial system specification for the disease monitoring system. The system will probably use the Department's planned in-house computer.

Appointment of Special Veterinary Officers

The Department employed two more special veterinary officers, to service the pig and sheep industries. This followed a similar appointment for the poultry industry, and was part of a policy to provide specialist animal health advice.

Animal Welfare

Model codes of practice for animal welfare were developed by the Sub-Committee on Animal Welfare for Animal Health Committee. Four codes (for poultry, pigs, rail and road transportation) were endorsed by Standing Committee on Agriculture and Australian Agricultural Council, for consideration by the States in consultation with their industries.

Draft codes for intensive husbandry of sheep and for air transportation were forwarded for comment by industry and welfare groups. Further draft codes are being developed.

Marketing and Economic Services

The Division of Marketing and Economic Services provides economic and marketing information to improve resource allocation and to increase the productivity of New South Wales agriculture.

Information relates to all aspects of production, marketing, distribution and consumption of agricultural products and inputs; the aggregate rural sector; and the relationship of the rural sector with other sectors of the New South Wales economy.

The Division provides information to the Minister; the Department's Executive; agri-business; industry organisations; the Department's technical, research and advisory staff; and the general public.

Marketing Services

Commodity markets: Divisional officers regularly spoke on radio for the ABC "Country Hour" and the Macquarie Network's "Rural Magazine" about international grain markets, commodity prospects and global trade conflicts.

Divisional commodity experts addressed various seminars (for example, Economics Teachers Association, economics students, and bankers seminars). They also published articles on commodities in publications such as the Division's *The Commodity Bulletin.*

The Department's advisory officers required up-to-date market outlooks for cereals and oilseeds when advising primary producers. This need was met by another eight issues of the Division's publication, *The Cereal and Oilseed Digest.*

Marketing unit: The uncertain economic climate increased demands for marketing unit services from marketing boards, cooperatives and producer groups.

Major consulting projects undertaken by the unit were a feasibility study of local producers purchasing the Mountain Maid Cannery at Batlow from the Letona Mountain Maid Co-operative; a study for the Central Coast Citrus Marketing Board on marketing initiatives for citrus; and research for the Exotic Fruit Growers Association to determine the consumer viewpoint on a possible name change for custard apples. Research reports were presented on the first two projects. A report will be completed on the remaining project.

A one day seminar conducted by the unit at Hawkesbury Agricultural College on fruit and vegetable marketing was attended by 170 growers. The usefulness of a 60 minute cassette containing key points of major seminar addresses sent to all attendees is being evaluated.

Members of the unit addressed meetings and provided advice to a wide range of groups, including staff of the South Australian Department of Agriculture and Fisheries; the National Workshop on the Avocado Industry; agriculture students; the Livestock and Grain Producers Association; and several marketing boards.

The unit played an important liaison role in bringing groups of producers in contact with marketing consultants with the best specialist expertise.

Legislative Services

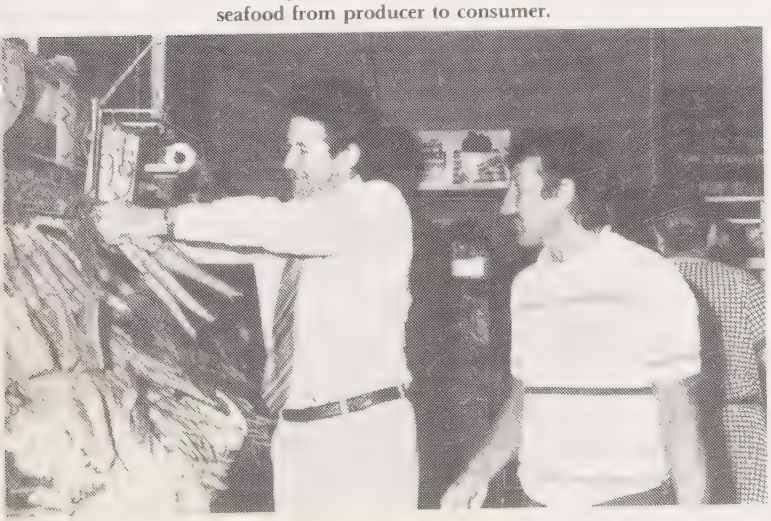
The Division of Marketing and Economic Services continued its involvement in drafting the proposed new Marketing of Primary Products Act. It was also heavily involved in the preparation of the new Egg Industry Act, 1983, and Regulations for the New South Wales Egg Corporation and the Poultry Farmer Licensing Committee which came into force from 1st July 1983 (replacing the Egg Marketing Board and the Licensing Committee which were established under the Marketing of Primary Products Act, 1927, and the Egg Industry Stabilisation Act, 1971, respectively).

The triennial elections for producers' representatives to the following boards were held in 1982-83: Central Coast (NSW) Citrus Marketing Board; Egg Marketing Board; Rice Marketing Board; Grain Sorghum Marketing Board; and Tobacco Leaf Marketing Board. These elections were conducted by the State Electoral Office after preparatory work by the Division.

The Wine Grapes Marketing Board (covering the Shires of Leeton, Griffith, Carrathool and Murrumbidgee) celebrated the 50th anniversary of its establishment on 3rd February 1983.

The dissolution of the Lemon Marketing Board was proclaimed by the Governor in May 1983.

The Department monitors agricultural produce and seafood from producer to consumer.



Primary Products Promotions Unit

The primary products promotions unit and its "fresh is best" promotion campaign continued to be a major vehicle for publicising the Department and its functions in the rural and urban communities. The unit's message on nutrition and the benefits of fresh food was well accepted. At the request of the various meat industry bodies, and in the light of falling consumption, the unit began emphasising the nutritional value of meat.

The Primary Products Promotions Officer promoted the concept of "fresh is best" to Departments of Agriculture in South Australia, Victoria and Western Australian, and spoke extensively to grower, consumer and retailer groups within New South Wales.

More than 20 000 copies of the "fresh is best" leaflet "Good Eating, Good Health" were distributed between December 1982 and April 1983. Other fruit/vegetable posters were featured in national magazines, and all were used for nutrition education in New South Wales schools. Activities were planned for the balance of 1983 directed particularly to nutrition education.

The "fresh food line" received 16 195 calls, and the unit answered 1350 written inquiries from the public during the year.

Media activities included interviews on Channel 9, Channel 7 and country television; all major city and country newspapers and radio stations; and a weekly column in the *Daily Mirror.*

The "fresh is best" promotional exhibit was displayed at the Royal Agricultural Society Show, country shows, the Good Life Expo and Senior Citizens Week.

Market Reporting Service

The market reporting service's livestock market reporters covered sales at Homebush, Armidale, Casino, Dubbo, Goulburn, Gunnedah, Tamworth and Wagga Wagga. Fruit, vegetables, cut flowers and retail sales were covered by market reporters located at Flemington.

Information collected by the market reporting service was disseminated through the print media, national and regional radio broadcasts, regional television, and phone-in recorded message services. A new method for dissemination of market information was the use of "Seventext" via Channel 7, Sydney. Weekly average retail prices of meat, fruit and vegetables and the best buys each week are reported over this medium.

The service kept abreast of the increased usage of computers in livestock selling. It reports and disseminates information from the pig sale by classification and other computer selling systems, such as NECLM at Armidale, throughout New South Wales.

The installation of an ECS 4500 microcomputer enabled market prices information to be compiled and disseminated more efficiently. The microcomputer is being used to computerise market data for easier storage, recall and manipulation to enable effective forecasting of market trends and their possible effects.

Economic Services

Policy: Economic analyses of a wide range of agricultural issues provided background information for New South Wales agricultural policy making. This information was used for briefing the Minister and departmental executive; preparation of background papers for the Australian Agricultural Council; preparation of submissions to State and Federal Government inquiries; and provision of policy advice to other Government departments, marketing boards, statutory authorities and industry groups. Issues examined included various proposals to alleviate the effects of drought; tobacco stabilisation arrangements; honey stabilisation proposals; egg industry marketing arrangements; irrigation water pricing policy; the Closer Economic Relations agreement with New Zealand; policy relating to the use of agricultural land; grain storage and transportation; dairy industry marketing arrangements; rural adjustment; control of cattle ticks; control of sheep lice; cattle compensation arrangements under the brucellosis eradication campaign; and domestic wheat marketing arrangements.

Production and Marketing Research

Applied economics research covering various aspects of agricultural production and marketing provided specialist support for the Department's research and advisory services. Studies in the production area included an examination of factors affecting wheat yield, and the economic aspects of the relationship between yield and quality in wheat breeding programmes; economics of minimum and zero tillage cropping techniques; assessment of the benefits of the Merino fleece measurement service; assessment of the effects of adoption of new technology in prime lamb production; a structural analysis of the pig and stock feed industries; the impact of adoption of alternative pig husbandry practices; techniques for optimising the use of irrigation water; and the potential for producing fuel alcohol in the northern rivers region.

In the marketing area, quantitative studies of the determination of supply, demand and price of a number of agricultural commodities were undertaken. These provided an empirical basis for the commodity out look information disseminated by the Department. The studies included development of econometric models of the beef, prime lamb and pigmeat industries. Economic evaluation of alternative livestock marketing systems, particularly electronic selling, continued. Another study evaluated the effect of pigmeat promotion.

Three issues of the Division's publication *The Review of Marketing and Agricultural Economics* were published during the year.

The Department's market reports are broadcast by the ABC and by country commercial radio stations.

Submissions to Inquiries and Government Business

Evidence was presented to IAC inquiries during the year on assistance to the canning fruit industry; tobacco industry; dairy industry; abattoir and meat processing industry; sugar industry; wheat marketing; and rural adjustment.

Evidence was also presented to the joint inquiry of the Parliament of New South Wales into the Western Division, and to the Dairy Industry Marketing Authority Policy Committee inquiry into dairy industry policy for New South Wales.

Farm Business Management

Regional economists continued to provide information to assist primary producers make decisions according to their financial circumstances. This information is a necessary complement to that provided by the Department's technical advisory staff. It is made available to producers as written material, by personal contact (either directly or at field days and workshops), and through advisory officers.

Increased use was made of the Department's microcomputer facilities at regional headquarters with the development of computerised techniques to help farm management decision making. Examples included: development of linear programming packages for determining optimum farm enterprise combinations, and for least-cost feed ration formulation; packages for drought feeding strategies; packages for sheep flock budgeting; a package for assessing share farming agreements; and preparation of gross margin budgets for a wide range of agricultural enterprises.

Due to the importance of farm management advice to the Department's advisory function, a farm management adviser was appointed at Lismore to service requirements of the North Coast Region.

Research Services

The research services of the Department of Agriculture provide information and services to assist the Department's advisory, educational and regulatory functions, and to help farmers and fishermen solve production problems. The continuing aims are to help farmers and fishermen increase productivity, and thus increase their capacity to adjust to economic changes; and to contribute to the pool of knowledge from which future advances may be made.

The research services provide diagnostic and analytical information direct to farmers and fishermen, and to departmental research, advisory and regulatory staff. For example, the Biology Branch of the Biological and Chemical Research Institute, Rydalmere, handled plant specimens for disease and parasitic nematodes identification; and samples of plants, soil, water, fertilizer, stock feed, pesticides, essential oils and cereals were subjected to tests by the Chemistry Branch.

A wide range of disciplines is involved in the research services provided by the Department. The following establishments where research is carried out are important parts of the Department's present administrative structure.

Central Veterinary Laboratory & Agricultural Engineering Centre, Glenfield
Agricultural Research Centre, Wollongbar
Agricultural Research & Advisory Station, Grafton
Tropical Fruit Research Station, Alstonville
Agricultural Research Centre, Tamworth
Agricultural Research Station, Narrabri
Brackish Water Fish Culture Research Station, Port Stephens
Agricultural Station, Seven Hills
Agricultural Research & Advisory Station, Glen Innes
Horticultural Research Station, Gosford
Horticultural Post Harvest Laboratory, Gosford
Agricultural Research Centre, Trangie
Agricultural Research & Veterinary Centre, Orange
Agricultural Research & Advisory Station, Condobolin
Agricultural Research Station, Bathurst
Agricultural Research Station, Cowra
Agricultural Institute, Yanco
Agricultural Research & Advisory Station, Dareton
Viticultural Research Station, Griffith
Agricultural Research Institute, Wagga Wagga
Agricultural Research & Advisory Station, Temora
Biological and Chemical Research Institute, Rydalmere
Inland Fisheries Research Station, Narrandera

New varieties and treatments are usually tested in small plots on research stations before full-scale field trials.

Research services are also provided from many research units attached to the above; the Dutton and Gaden Trout Hatcheries at Ebor and Jindabyne; the Artificial Stock Breeding Centre, Berry; the Regional Veterinary Laboratories at Armidale, Wollongbar, Wagga, Orange and Glenfield; and the Hawkesbury Agricultural Research Unit, Richmond.

The main financial support for research came from Consolidated Revenue, and about eight per cent from rural industry research grants. Some are detailed below.

	1981-82 $	1982-83 $
Australian Meat Research Committee	490 278	648 388
Wool Research Trust Fund	270 643	370 184
Wheat Industry Research Committee of NSW	406 190	508 882
Wheat Industry Research Council	319 594	401 336
Australian Pig Industry Research Committee	48 833	69 433
Barley Industry Research Committee of NSW	29 605*	69 455
Barley Industry Research Council	12 800	24 266
Australian Dairy Research Committee	19 415	17 753
Poultry Research Advisory Committee	10 915	21 600
Australian Chicken Meat Research Committee	41 100	32 070
Dried Fruits Research Committee	16 800	35 135
Oilseeds Research Committee	43 024	94 069
Honey Research Committee	1 800	17 300
Central Tobacco Advisory Committee	59 250	74 330
Total	$1 770 247	$2 384 201

* Estimate

About $700,000 was available in 1983-83 from miscellaneous sources, including the Australian Cotton Growers Research Association; the Mushroom Growers Association; the Central Coast Citrus Growers Association; the Rural Credits Development Fund; the Commonwealth Special Research Grants; the New South Wales rice industry; and the Swine Compensation Fund.

Research Results

The major results from research activities in 1982-83 are reported under the various commodity headings in this report. However, a number of major activities and findings of agricultural significance are not included under particular commodities.

Some research and new developments not covered under the commodity headings involve the professional staff of the Biological and Chemical Research Institute, Rydalmere. Their responsibilities include research, liaison, service to research and industries, and regulatory duties relating to various Acts.

Advisory Services

One of the Department's main functions is to advise farmers, fishermen and consumers how best to produce, market and select primary produce and seafood. Advisory officers answer individual inquiries, conduct meetings and field days, and take part in regional and statewide programmes designed to assist producers and consumers. They are backed up by publicity officers, editorial officers, graphic designers, photographers and other experts who help get the messages across to the public.

The following table shows some of the activities of research and advisory officers during 1982-83.

Advisory Service Activities, 1982-83, not including the Division of Fisheries

	Region 1	Region 2	Region 3	Region 4	Region 5	Head Office and statewide establishments	State total
Agfacts							258
Original press articles	696	1 639	1 517	1 601	886	202	6 541
Newsletters produced	23	121	31	161	77	50	463
Contributions to newsletters	256	471	142	410	279	113	1 671
Original radio broadcasts	702	2 066	1 878	1 949	1 457	179	8 231
Original TV programmes	34	107	67	178	618	113	1 117
Field days held	270	563	152	683	429	135	2 232
Meetings held	436	859	262	884	1 050	717	4 168
Conferences and schools held	113	387	86	350	311	361	1 608
Total farm visits	7 623	12 634	4 712	17 461	16 745	3 740	62 915
On-farm trials	277	679	242	707	950	182	3 037
Papers and Notes published in scientific journals	18	76	23	64	69	151	401
Books, book chapters and post-graduate theses	2	13	8	30	11	24	88
Contributions to Proceedings of societies	41	151	33	110	163	136	634
Regional and district bulletins	12	108	39	50	97	12	318

Technical Services

Animal health diagnostic service: The Regional Veterinary Laboratories at Armidale, Glenfield, Orange, Wagga Wagga and Wollongbar, and the Central Veterinary Laboratory at Glenfield, provided the diagnostic services for government veterinarians and private practitioners. Some 15 000 specimen consignments were received, plus a further 1.9 million serum samples for tests under the Bovine Brucellosis Eradication Campaign. Details are tabled in Appendix I.

A total of 2260 escort bees were dissected to detect internal parasitic mites which cause Isle of Wight disease, but none were found.

Emergency private veterinary service: In recognition of a long standing need, departmental veterinary officers at Bourke, Broken Hill and Cobar now provide an emergency private veterinary service in isolated locations more than 100 kilometres from an existing veterinary practice.

Plant health diagnostic services: During the year, 4120 insect and mite specimens were submitted to the Entomology Branch at the Biological and Chemical Research Institute for identification, and 3782 specimens were added to the insect and mite collection.

Transfer of Cereal Chemistry Unit to Tamworth and Wagga Wagga: The transfer of staff and equipment of the Cereal Chemistry Unit from the Biological and Chemical Research Institute to the Agricultural Research Centre, Tamworth and the Agricultural Research Institute, Wagga Wagga, was completed. The move will strengthen the Department's research and advisory activities in cereal chemistry as they relate to cereal breeding programmes in the northern and southern parts of the State.

Transfer of Essential Oils Unit to Wollongbar: The transfer of staff and equipment of the Essential Oils Unit from the Biological and Chemical Research Institute to the Agricultural Research Centre, Wollongbar, was completed. The relocation of the Unit to Wollongbar will assist the development of an essential oils industry in the North Coast Region.

Automation of laboratory analyses: A microcomputer network was set up at the Biological and Chemical Research Institute, Ryalmere, to handle chemical data generated on routine diagnosis of water samples. Programs record the date of receipt and the analyses required; collate the information obtained, and check its accuracy; and print record and report forms. Similar programs are being prepared for soil and plant tissue samples.

Agricultural Engineering

The Agricultural Engineering Branch conducts research and advisory programmes into relevant areas of agricultural engineering for the rural and farm equipment industries of New South Wales, and services many of the Department's own technological needs. Engineering research work concentrated particularly on conservation farming systems; broadacre tillage; tractors and traction; rural energy issues; and specialised departmental equipment developments.

Conservation Farming Systems

The lack of suitable seeding equipment is a major constraint to the adoption of direct drilling and no-till seeding to reduce soil erosion.

Staff at the Agricultural Engineering Centre, Glenfield, designed two no-till seeders. The "Tamworth" machine, a 13 row planter, was built at Glenfield and successfully tested at a number of sites in northern New South Wales. The machine established that no-till seeding into heavy residues is practicable; that wheat yields with no-tillage are equivalent to or better than yields for cultivated fallows; and that sorghum and other summer crops respond to no-tillage.

The "north coast" soybean conservation tillage seeder and a machine for southern New South Wales are under development at Glenfield, the former being constructed with the support of an Oilseeds Research Committee grant.

New replaceable tyne point designs were developed from trials of heavy-soil ground engaging tools, and work in crop residues. Studies continued which clearly demonstrate that direct drilling will reduce costs of crop establishment, and that soil will be more trafficable. However, conventional seeding equipment will be heavier to pull than on cultivated country.

Broadacre Tillage

The long-term engineering and agronomic comparison of tillage systems at Condobolin suffered a severe setback due to drought. However, draft measurements made before sowing indicated that — with the same number of passes — soil preparation costs for seeding depended more on speed and depth of operation than on the system adopted. Specific draft measurements of a range of implements, obtained at several sites in the State, enabled reasonable projections of the savings possible from revised tillage techniques.

Information from the Glenfield stump-jump mechanism test facility and from computer simulations was used by one manufacturer in its product development programme. The stump-jump test facility was modified to measure rotational as well as linear force effects, and is the only one of its kind in the country.

Tractors and Traction

The exhibit demonstrating tractor ballasting and weight transfer was popular at an LGPA Regional Conference and the major field days. Tractor fuel saving, traction, matching, and selection were the subject of constant advisory work by engineers and agricultural mechanisation advisory officers.

An American diesel engine fuel heater, claimed to save significant amounts of fuel, was evaluated, but the claims were not substantiated. This conclusion was consistent with information subsequently provided by the Nebraska Tractor Testing Laboratory.

Rural Energy Issues

Inquiries about farm fuel production and utilisation were received from overseas, interstate, and from Federal and educational institutions. Performance assessments of the Glenfield farm fuel ethanol plant continued, and plant operation was demonstrated to several groups. Detailed evaluations were carried out on this, biomass and waste utilisation, and methane production.

A milestone was reached in the vegetable oil fuel experiments, when chemically-modified linseed oil was successfully used to fuel a direct-injected diesel engine for 1000 hours of operation.

Information was disseminated on diesel fuel storage and overcoming problems with waxy distillate in winter operation.

Mechanisation Advisory Services

Because of the drought, many inquiries were received regarding livestock feeding and watering technology, light crop harvesting, wind erosion control, direct drilling, press wheels for improved crop establishment, and solar water pumping.

Officers participated in courses designed to help farmers cope during the drought and to re-establish crops and pastures following drought-breaking rains.

An orchard spray application project at Orange was started, to determine whether unsatisfactory orchard pest control is due to spraying equipment inadequacies or incorrect operation.

Energy Management Programme

In the first phase of the Department's energy management programme, five major facilities transferred to more economical demand tariffs, with an anticipated annual saving to the Department of $83,000. The total departmental electricity consumption was reduced by five per cent in 1982-83, thus saving $50,000.

Land Use Assessment

The Department remains committed to preventing the loss of good agricultural land to other uses.

Increased requests for agricultural land assessments were received from local government councils for use in local and regional environmental plans. During the year, studies were completed for most of the Shires in the North Coast Region; for the Lithgow, Cowra and Mudgee Shires; and for the Illawarra region. Studies were begun in Rylstone, Baulkham Hills, Gosford, Wyong, Tumut, Wagga and Bathurst local government areas; in the lower Hunter and the greater Sydney regions; and the Kosciusko sub-region.

Comprehensive assessment reports are necessary to adequately inform regional and local planners and decision makers about the significance of their better quality agricultural lands. These reports provide a sound basis for recommending courses of action aimed at deflecting small-lot subdivision away from the better lands, while at the same time providing for legitimate rural residential development.

Two additional professional officers were appointed to the assessment work full-time, and local and regional advisory staff became increasingly involved in compiling the comprehensive assessment reports.

Review of Environmental Impact Statements and Local Environmental Plans

Reviews or appraisals of 47 statements and plans were made. Of these, 27 were environmental impact statements: 15 on mining or extraction; six on proposed water supplies; three on sewerage developments; two on roads; and one on forest logging. The other 20 were local environmental studies submitted by local government councils.

Environmental Aspects of Pesticides

The Department of Agriculture fulfils an important function in advising the public and other authorities on the role of pesticides in today's society. During the year, the pesticides and environmental studies unit gave advice to schools, universities, State authorities, private industry, local government, farmers' organisations, householders, landholders, and conservation groups. More than 500 telephone and mail inquiries about pesticides were also received by the unit.

The disposal of pesticides and pesticide containers was investigated during the year. Guidelines to overcome the problems of incorrect disposal are being developed in consultation with other appropriate State authorities. Major action was taken in the Murray and Riverina Region to develop a coordinated disposal system for containers used by irrigation farmers.

Environmental studies to investigate the effects of pesticides in specific environments were continued or initiated.

A major study investigating the distribution of DDT and fenvalerate in the Moomin Creek area was completed in the Gwydir Valley.

Proposals were made to re-survey the cotton grazing areas in the Namoi to study the effects of current pesticide use.

Advice was provided to other State authorities (such as the Water Resources Commission, and the National Parks and Wildlife Service) on the effects of agriculture on the environment. Guidelines are being developed to ensure that agriculture can remain viable in areas which are environmentally sensitive.

Mining Act, 1973 — Determination of Agricultural Land

The Department of Agriculture is required under the Mining Act, 1973, to determine whether land is agricultural or non-agricultural within the meaning of the Act. This determination is made following objections from the landholders. One hundred and seven mining, prospecting and exploration licence areas, involving 202 farmers' properties, were surveyed and reported on by the Department, a 20 per cent increase since 1981-82.

More than 100 public and landholder inquiries were received concerning the Department's role under the Mining Act, 1973.

Agricultural Education

The Department's three agricultural colleges teach students in the field as well as in the classroom.

The Department continued to provide an agricultural education service through courses offered by the C.B. Alexander Agricultural College at Paterson; the Murrumbidgee College of Agriculture at Yanco; and the correspondence course production unit located at the C.B. Alexander Agricultural College. Orange Agricultural College is administered by the Department through the Regional Director of Agriculture at Orange. However, it is funded by the Higher Education Board, and provides an annual report on its activities to that organisation.

The courses offered by the colleges and student statistics are listed in Appendix VI.

C.B. Alexander Agricultural College

C.B. Alexander College (Tocal) has the primary purpose of preparing and helping people for careers on the land. The College offered full-time Certificate and Advanced Certificate courses in Agriculture for 130 students, and a Dairy Apprenticeship course for another 20 students.

The materials used by the 500 clients enrolled in the Department's Farm Management and Farm Office Management correspondence courses were produced at the College. Many short courses were offered by the College, both alone and in conjunction with other groups.

C.B. Alexander Agricultural College expanded community involvement in the development of its curriculum. Meetings were held with the Education Committee of the Livestock & Grain Producers Association, with the College's Horticulture Steering Committee, which is composed of people from the industry, and with the College's cooperating farmers. The latter provide work experience for students, and are particularly valued for this reason and because they are able to advise the College on industry acceptance of the students and graduates.

The College commenced monthly seminars for inmates of Maitland Gaol at the request of the Department of Corrective Services. The inmates are studying agriculture by correspondence through the Department of Technical and Further Education.

Despite the effects of drought and economic recession, about 80 per cent of new Advanced Certificate graduates from the College were employed within two months of completing their course.

Murrumbidgee College of Agriculture

The Murrumbidgee College's administration and farm operation was fully integrated with the research function of Yanco Agricultural Institute. This integration of activities led to more efficient use of available land and closer cooperation of staff, which was to the advantage of both groups.

A start was made in 1983 to transfer advisory staff from Leeton to the Yanco Agricultural Institute. Although the transfer initially

involved only administrative staff, ultimately all Leeton advisory officers will be located at Yanco. The planned grouping of education, research and advisory services at the one centre will be a unique development in New South Wales, and will provide new opportunities for servicing the educational needs of the rural community.

Detailed plans were completed for the construction of new training facilities at the College. Seminar rooms, computer equipment, additions to the library and a skills training building will cater for short course participants and certificate course students. Funding for these proposals is under consideration by the Commonwealth Tertiary Education Council.

The appointment of an advisory officer (courses) enabled a significant expansion in the College's continuing education programme. College, advisory and research staff combined to present 12 short courses for 262 primary producers, comprising 764 participant days.

On-farm training for certificate courses was expanded to four weeks training for each student. Over 60 primary producers in southern New South Wales cooperated with Murrumbidgee College in this practical skills training scheme in 1982-83. Farm machinery suppliers also assisted the College's practical skills training programme by donations and loans of equipment for student use.

Publications

Following last year's review of publications and information services, progress was made in converting publications to uniform (A4) size; and in directing the resources previously devoted to magazines to Agfacts, newsletters and mass media.

During 1982-83, 258 Agfacts were produced, bringing the total to more than 400 titles, some in several editions. Unlike similar factsheet series from most other organisations, Agfacts are not restricted to one sheet in length. Although most were in fact one to two pages, they ranged to 28 pages in length, with an average of more than four pages. Where necessary, colour Agfacts were produced without increasing the price. In several instances, such as drought feeding and brucellosis control, Agfacts were distributed free of charge.

Farming in a Small Way was published for small-scale and part-time farmers.

A significant improvement in printing arrangements, which will greatly speed up production of multi-page Agfacts, was achieved when the Government Printer agreed to install and staff typesetting equipment alongside the editorial section in the McKell Building. This arrangement, the first decentralised printing of this kind in the New South Wales Public Service, will begin early next financial year.

Newsletters continued to play an important role in getting specific information direct to primary producers. By year's end, 40 newsletters were being regularly produced in regions, each serving a defined geographical or subject-matter area.

Among significant other publications produced were "Farming in a Small Way", an authoritative 250-page book for prospective or existing small-scale or part-time farmers; "Insect Pests of Fruit and Vegetables in New South Wales", a 312-page guide to understanding and controlling insect pests, published for the Department by Inkata Press; and a series of five booklets describing agricultural and pastoral conditions for each of the Department's regions.

While use of radio and press did not diminish, opportunities were taken to make still greater use of television. Special attention was given to the Leeton/Griffith area, which acquired a well-equipped mobile video unit.

Training and Staff Development

The number of staff development and training programmes organised by the Department increased during the last year. One hundred and eighty seven people attended 11 workshops conducted by the staff training section between February and June 1983. During this period, two management training courses were also organised in conjunction with TAFE, and about 60 departmental personnel attended courses conducted by the Public Service Board and other outside bodies.

The series of workshops on communication skills training for professional officers was continued by the Division of Agricultural Services. Forty-one officers, newly appointed to district advisory work, received practical training in one-to-one, group and mass media communication at two workshops at Murrumbidgee College of Agriculture and Orange Agricultural College. The series is continuing, keeping pace with the appointment of additional district advisory officers.

Communication skills training was also provided for foremen of agricultural research establishments as part of a conference at the C.B. Alexander Agricultural College.

Other training provided by officers of the Division of Agricultural Services included a leadership school for dairy farmers at Hawkesbury Agricultural College, and an induction programme for overseas Rural Youth exchangees.

Eighteen officers from the Division of Plant Industries (including three district horticulturists and six district agronomists with varying lengths of service of up to two years) attended the six week in-service irrigation training school at the Yanco Agricultural Institute. A booklet listing the skills and knowledge required of district agronomists and horticulturists was prepared, and is in use for their training and development.

C.B. Alexander Agricultural College (Tocal) arranged a number of training and development activities for staff. Apart from staff participation in professional conferences, the most important activities in 1982-83 were a field staff development workshop, curriculum development meetings and the attendance of a Tocal lecturer at the Thirteenth International Course on Vocational Education and Teaching in Agriculture, in Switzerland.

Library Services

Rapid changes in the way information is stored and distributed are providing the opportunity for a complete reassessment of the traditional library role. This was reflected in the organisational shift from a central library with branches, through regional libraries, to a network of independent libraries with clear network responsibilities and interdependent collections. The emphasis of the librarians' duties now falls on reference/information activities matching the needs of professional officers with current resources, and supporting other libraries in the network.

The main collection is distributed across the 12 staffed libraries, with other material stored at regional advisory headquarters, district offices, and research stations throughout the State. Coordination is achieved with machine based systems.

CLANN (College Libraries Activities Network, NSW) is a cataloguing cooperative of most of the Colleges of Advanced Education libraries of New South Wales and some other institutions. Membership allows the Department access to the combined library holdings of all the members; and provides a union catalogue, on microfiche, of the collection of the Department at every location.

Other membership advantages available include reciprocal borrowing rights which are of great benefit to country officers.

GLOBE PASS, the periodical management programme of Globe Subscription Agency provides, on request, current information on the holdings and circulation of periodicals at every location.

ABOA (Australian Bibliography of Agriculture), the cooperative data base established by the State Departments of Agriculture and CSIRO, allows control of Australian agricultural publications. The data base is available on Ausinet (Australian Information Network) and will allow remote locations access to a list of the national publication output in agriculture, and indicate where copies may be obtained.

Overseas Projects

The Department continued to support programmes of the Australian Development Assistance Bureau, by acting as managing agent for overseas projects, and by providing technical advisers to developing countries.

At present the Department is managing Phase II of a land settlement project in Sri Lanka, on behalf of the Bureau, which has estimated development costs over four years of $3 million. Expenditure on Phase II since work commenced in 1980 is now $1.44 million.

Senior departmental specialists participated as advisers and consultants on short assignments to Sri Lanka, China, Indonesia, Western Samoa, Pakistan, Thailand, the Philippines and Malaysia. Twenty officers spent a total of 89 weeks on overseas assignments.

The Department continued to support the development of a model beef cattle farm on Hainan Island, China, which was established in 1981. Two departmental technical advisers successfully established extensive areas of tropical pastures, and improved cattle production through adapted management techniques. They were supported by visiting senior specialists from the Department.

Two trainees from Pakistan received three months training in horticulture, and a trainee from Nigeria received two months training in cereal production at departmental institutions.

Regulatory Services

Regulatory Function of the Department

Implementation and enforcement of statutory provisions is the function of Government, and the Department of Agriculture New South Wales has a basic role in:

- the control or eradication of plant and animal diseases and pests;
- ensuring high quality in agricultural and fisheries products, especially foodstuffs, and aids such as stock medicines and pesticides;
- maintaining standards of conduct in areas of activity associated with agriculture and fisheries; and
- the prevention of entry of exotic plant and animal diseases and pests.

These powers and responsibilities are vested in the Department through various Acts and their Regulations.

Regulatory Staff

Some officers combine regulatory work with other activities, and special groups are appointed for specific regulatory functions, for example: meat inspection; fisheries inspection; cattle tick control; brucellosis eradication; plant disease regulations; quarantine inspection for imported produce; and quality inspections for exports.

The following table summarises departmental staff who were inspectors under an Act and who were directly involved in regulatory work. Many of the professional staff had a dual advisory/regulatory or a research/regulatory function. Regulatory work was a major activity in four divisions.

Staff Involved in Regulatory Work

	Agric'l Services	Animal Health	Animal Prod	Plant Inds	Biological & Chemical Res. Institute	Fisheries	TOTAL
Professional	5	55	62	4	4	—	130
Inspectors	10	957	—	160	—	86	1 213
Total	15	1 012	62	164	4	86	1 343

Main Acts Concerned with Regulatory Activities

The Department's regulatory activities are carried out under the following main Acts:

State Acts: Agricultural Holdings Act, 1941; Agricultural Seeds Act, 1921; Apiaries Act, 1916; Banana Industry Act, 1969; Canned Fruit Marketing Act, 1979; Cattle Compensation Act, 1951; Dairy Industry Marketing Authority Act, 1979; Dried Fruit Act, 1939; Farm Produce Agents Act, 1926; Fertilizers Act, 1934; Fisheries and Oyster Farms Act, 1935; Horticultural Stock and Nurseries Act, 1969; Marketing of Primary Products Act, 1927; Meat Industry Act, 1978; Noxious Insects Act, 1934; Pastures Protection Act, 1934; Pesticides Act, 1978; Plant Diseases Act, 1924; Potato Growers Licensing Act, 1940; Poultry Processing Act, 1969; Registration of Stock Brands Act, 1921; Stock (Artificial Insemination) Act, 1948; Stock (Chemical Residues) Act, 1975; Stock Diseases Act, 1923; Stock Food and Medicines Act, 1940; Swine Branding Act, 1940; Swine Compensation Act, 1928; Veterinary Surgeons Act, 1923; Wine Grape Processing Industry Act, 1979.

Commonwealth Acts: *Quarantine Act* 1908-73; *Export Control Act* 1982; *Fisheries Act* 1952.

Processing of research data will be significantly speeded-up as new computer equipment is acquired.

Regulatory Legislation

The Legal Branch coordinates the preparation of legislation (including amendments to existing statutes), prepares informations for prosecution, and appears on behalf of the Department in defended cases. Officers of the Legal Branch also conducted legal training seminars throughout the State and at Head Office to assist staff in their regulatory activities under various Acts.

The following general activities were undertaken under State Acts: informations prepared, 128; proclamations, 25; notifications, 10; gazettal of appointments, orders and miscellaneous notices, 78.

Summary of Legislative Activities

The following legislation was assented to:

Acts
Cattle Compensation (Amendment) Act, 1983
Cattle Compensation (Meat Inspection) Amendment Act, 1983
Commonwealth Powers (Meat Inspection) Act, 1983
Defamation (Farm Produce) Amendment Act, 1983
Egg Industry Act, 1983
Farm Produce Act, 1983
Grain Handling (Amendment) Act, 1982
Horse Breeding (Repeal) Act, 1982
Meat Industry (Amendment) Act, 1983
Poultry Processing (Amendment) Act, 1983
Statutory and Other Officers Remuneration (Egg Industry) Amendment Act, 1983
Stock (Chemical Residues) Meat Inspection (Amendment) Act, 1983
Stock Diseases (Meat Inspection) Amendment Act, 1983
Swine (Compensation (Meat Inspection) Amendment Act, 1983
Wheat Marketing (Amendment) Act, 1982
Wheat Marketing (Grain Handling) Amendment Act, 1982

	No. of Amendments
Regulations	
Fertilizers Act, 1934	2
Fisheries and Oyster Farms Act, 1923	3
Horticultural Stock and Nurseries Act, 1969	1
Marketing of Primary Products Act, 1927	2
Meat Industry Act, 1978	8
Noxious Insects Act, 1934	2
Pesticides Act, 1978	1
Plant Diseases Act, 1924	1
Poultry Processing Act, 1969	1
Stock Diseases Act, 1923	2
Stock Foods and Medicines Act, 1940	1
Swine Compensation Act, 1928	1
Veterinary Surgeons Act, 1923	1
	Total 26

Stock Food and Medicines Act, 1940

Following a review of the weed seeds listed in the Foreign Ingredient Schedule, the number of weeds was reduced to 23 species which have seeds or plants that are either exotic to New South Wales; toxic to animals; taint animal products; or have been declared to be noxious.

From 1st September 1982, about 60 agricultural inspectors were appointed inspectors under the provisions of the Stock Food and Medicine Act, 1940. These officers carry out activities previously performed by the inspectors (various acts). This new arrangement provided a far more efficient system for supervising activities of stock food manufacturers.

Meat Industry Act, 1978

Amendments to the Act provided for the licensing of knackeries, and their hygiene and slaughtering standards. These also provided controls on production and movement of pet meat from abattoirs, slaughterhouses, knackeries and animal food processing plants.

Veterinary Surgeons Act, 1923

New regulations requiring the licensing of veterinary hospitals came into effect on 2nd July 1982. Most veterinarians had complied with this new legislation by 30th June 1983.

Quarantine Act 1908-73 (administered on behalf of the Commonwealth).

Following recommendations of a working party, the plant and animal quarantine inspection services were integrated at the work face. This will provide improved surveillance of high risk quarantine areas, by the combined work force being totally involved as a single agricultural quarantine service.

Pesticides Act, 1978

The Pesticide Registration Section is responsible for the administration of the Pesticides Act, 1978; and allied matters.

The Act controls the sale, supply, possession and use of pesticides; and provides for the registration of pesticides, the approval of containers (for registered pesticides), and the registration of labels.

The Pesticide Registration Section processed applications for registration of new pesticide products, approval of containers, registration of labels, and issue of permits during the year.

Officers of the Section gave a number of lectures on the Pesticides Act to various farming, horticultural and pest control operator groups during the year.

Plant Diseases Act, 1924

Powers under this Act were used throughout the State to prevent the spread of major pests and diseases. There was a change in the policy to prevent the spread of fruit fly into the quarantine zone of the Murrumbidgee and Murray River Irrigation Areas. Roadblock activities were scaled down on entry routes, and staff redeployed to apply whole town fruit fly bait treatments in order to prevent fruit fly becoming established in towns of the region.

A one year intensive control programme to identify and treat all infestations of warehouse beetle in NSW was completed in December. The programme was supported by Standing Committee on Agriculture and cooperatively funded by the Commonwealth and States. See *Region 2 NEW ENGLAND, HUNTER & METROPOLITAN REGION.* A total of 487 infestations were detected and treated from 4388 business and industrial premises and farms inspected over about one third of the State.

Agricultural Bureau

The Bureau continued its main objective of promoting rural education in conjunction with the Department of Agriculture, with a total membership of 2200 in 72 branches throughout the State.

Major statewide activities included:

- A successful State conference on the theme of Farm Finance, with follow-up seminars at various branches throughout the State.
- In conjunction with the NSW Oats Marketing Board, a series of seminars was held in the cereal growing parts of the State to update knowledge of oat production and marketing.
- The theme of "post drought strategies" was developed for the Adult Education Board Grant, involving branches and the Rural Australia Foundation in seminars on this topic.
- In cooperation with beef cattle officers of the Department, new guidelines for a State Beef Cattle Breeders' Competition were established.
- Within some regions, the Bureau divisional council formed consultative committees with departmental regional staff to allow better flow of ideas and information.

Rural Youth

The structure of the Rural Youth organisation was partially reorganised following a series of discussions and seminars. The reorganisation continued as the movement accepted greater responsibility for its own functions and actions. The Department of Agriculture continued full support in agricultural matters, and, through the group activities unit, administrative support to the State Council. Overall, however, the organisation became much more independent, and as a result there was much greater vitality and interest within it.

Senior section membership of 265 in 16 clubs caused concern, but the Junior membership increased to 1442 in 68 clubs. Significantly, both sections came closer together within the organisation, and this should improve Senior membership.

Major achievements included:

- Formation of a new State Council, with representatives from both Junior and Senior sections, which will accept total responsibility for the organisation in finance, major policy, programme development and relations with other organisations.
- The development of close liaison with organisations other than the Department of Agriculture in developing new programmes. Included were the Livestock and Grain Producers' Association, the Country Women's Association and various private industry groups.
- The trend towards much closer relations between the Senior and Junior sections, both at the State level and in local areas.
- The formation of 'Friends of Rural Youth', an organisation of individuals and groups with sympathy towards Rural Youth, mostly through past association. This organisation will supply representatives to the State Council, and assist in obtaining funds and sponsorships.

Even with all of these changes, the Department retained a special liaison with the organisation, fully supporting all agricultural projects and assisting the State Council through the group activities unit.

Correspondence Courses

These were originally sponsored by the Rural Youth organisation, but have now been incorporated completely into the Department of Agriculture. A management committee of representatives from the group activities unit, course advisory officers, the production unit and Tocal College was formed. This rationalised and simplified the administration and management of the courses.

The committee investigated integrating the correspondence courses into the total departmental educational activity, particularly through the agricultural colleges. As new units or new options are developed within courses, priority will be given to those with appeal throughout both colleges and the correspondence courses. By offering a wider range of options as well as a set core within each course, it is hoped to cater for a wider range of student interests and agricultural industries.

As course numbers continue to rise each year, the popularity of this project seems assured. In 1983 enrolments were:

Farm Management Course Level I	254
Level II	60
Farm Office Management Course	197
TOTAL	511

During the year, 27 students successfully completed level II and were awarded certificates.

Features of these courses are the residential schools held in conjunction with the University of New England, the University of Sydney, and Orange Agricultural College. In particular, a close liaison was kept with the University of New England in reviewing course material.

The Department continued to operate under severe financial constraint; restrictions on staff recruitment; internal changes brought about by the recommendations of the Government Functions Task Force; the amalgamation of State Fisheries as a Division of the Department; and the administration of the State and Federal Governments' Drought Relief Schemes.

The Department deliberately restricted the number of committees. The Staff Establishment Review Committee (SERC) and the Budget Priorities Committee, together with the Senior Executive, met on a number of occasions to discuss broad administrative issues facing the Department.

Amalgamation of State Fisheries with the Department of Agriculture

The NSW State Fisheries Department became a Division of the Department of Agriculture on 16th March 1983. All relevant administrative staff were transferred to the McKell Building from A.D.C. House, and common functions such as accounts, personnel, staff and equal employment opportunity fully amalgamated with the Department of Agriculture.

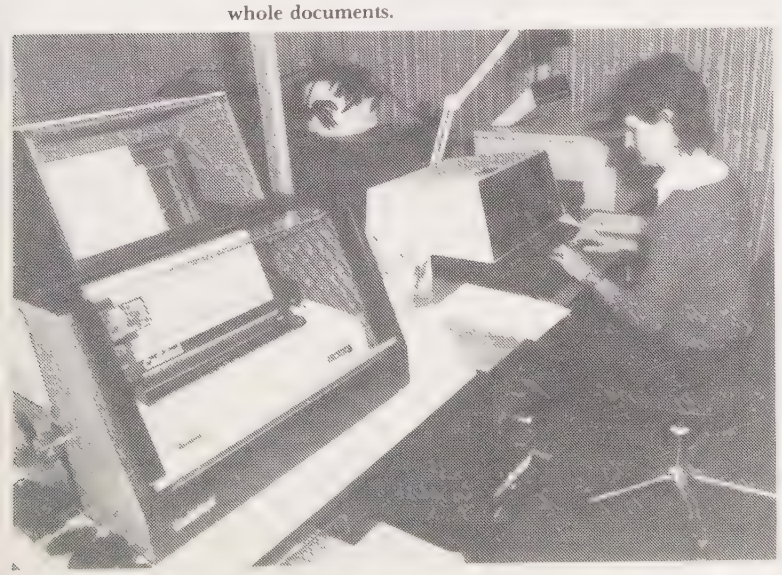
In addition, regional offices of the Department assumed responsibility for local administrative matters affecting Fisheries staff.

Transfer of Meat Inspection Service

The transfer of the Meat Inspection Service to the Commonwealth Government was undertaken by a Steering Committee consisting of representatives from the Department, the Commonwealth Department of Primary Industry and the Commonwealth Public Service Board. Three working parties were constituted to examine staff, industrial and financial matters. Information seminars were conducted throughout the State which advised all meat inspectors and branders of conditions of service relating to the transfer.

Three hundred and twenty eight meat inspectors and branders will be transferred to the Commonwealth on 1st July 1983. This involved considerable work in finalising leave, allowances and salary records. In addition, lengthy discussions were held with the various superannuation funds on the transfer of members' rights to the Commonwealth.

Word processors allow authors to correct and edit correspondence, reports and publications without retyping whole documents.



Finance

Work continued towards the introduction of programme budgeting into the Department. Although the 1982-83 budget was presented in the traditional line item format, a supplementary set of figures was formulated detailing the 1982-83 allocations and expenditure in a programme format.

Overall, the Department spent $96,505,219 from the Consolidated Revenue Fund, against an original budget allocation of $90,683,264 as supplemented by Treasury to cover costs of award increases and other justified expenditures; thus achieving a balanced budget. Income to the Department from fees for services rendered and for other miscellaneous receipts totalled $17,676,250.

Management Services

In June 1983, the Public Service Board made a positive appraisal of the Department's proposal to acquire its own major in-house computer facilities.

October 1982 saw the introduction of Agnet, a high speed data communications network connected to the Public Service Board's ADP Service Bureau's Burroughs B7700 Computer. Agnet, which connects 15 departmental sites, reduced data processing costs, and achieved significant gains in the productivity of research and biometrical staff.

During the year, staff establishment information was transferred to microcomputer as the first stage in computerising other procedures within the staff and personnel sections. In addition, a comprehensive set of programs was developed for the Management Information System to be processed on a microcomputer.

Other major activities were the relocation of Fisheries staff to the McKell Building, and planning for the introduction of work station accommodation.

New advisory offices were opened at Rylstone, Wellington, Jerilderie and Dungog. Twenty five accommodation alterations and additions were completed, with a further 22 projects still underway.

Equal Employment Opportunity

The Department's equal employment opportunity management plan was completed and lodged with the Office of the Director of Equal Opportunity in Public Employment on 1st September 1982.

The Equal Employment Opportunity Co-ordinator presented a number of seminars on the main aspects of equal employment opportunity.

Support was given to staff participation in special programmes such as career development workshops for women, communication skills workshops for migrants and aborigines, the National Employment Strategy for Aborigines training programme, and work experience for youth and migrants.

Safety

There was an overall decrease in the number of days lost through work related accidents for the year ended 30th June 1983. This resulted in a reduction in the Department's workers' compensation premium, from 1.716 per cent of the total payroll in 1981-82 to 1.38 per cent in 1982-83.

For the second year in a row, the staff of the Queensland border section did not report a lost time accident, a remarkable achievement in view of the nature of their work.

The Safety Officer visited most departmental institutions, and conducted many fire prevention programmes throughout the Department. Staff were instructed in the use of fire extinguishers, pesticides, safety equipment and the storage of chemicals.

Now that State Fisheries has merged with the Department as a Division, a new area of safety programmes will be undertaken relating to boats, fishing and associated activities.

Recruitment

The suspension of recruitment, and the accompanying wage pause, had a marked effect on recruitment within the Department during 1982-83. Only 418 positions were advertised in the Public Service Notices, with 243 also advertised in the press.

Counselling

Thirty two employees, rendered surplus following recommendations of the Government Functions Task Force, were successfully redeployed within the Department. A progressive redeployment of staff affected by the new cattle tick control policy on the North Coast was started.

Drought Relief

Claims for drought relief were processed at regional offices and Head Office. The strength of the Head Office unit had to be increased substantially to meet the volume of claims. Drought relief payments made from State Treasury funds amounted to $23,333,965, and Commonwealth Fodder Subsidy Scheme payments amounted to $46,886,958.

Finance Branch

The regional sub-drawing account system was implemented. As at 30th June 1983, three regions were using the sub-drawing accounts for fodder payments only, while the remaining two regions were paying all accounts locally and using the sub-drawing accounts for recoup purposes. It is expected that all regional sub-drawing accounts will be fully operational by 31st December 1983.

The Department's revenue remitting system was overhauled during 1982-83, and formal guidelines issued for the implementation of a single remitting account from 1st July 1983. This system will more effectively handle the local collection of revenue and its remittance to the Treasury.

Because of extra drought relief payments, Finance Branch issued 22 000 more cheques than in the previous year.

Management Audit and Analysis Branch

Forty three financial and administrative audits were undertaken during the year. In addition, 15 inspections were conducted under the provisions of the Farm Produce Agents Act.

Other financial and audit activities included the development of sub-drawing and remitting accounts; participation in continuous payroll checks; verification of plant and stores returns lodged by regions; and audit of departmental investments and financial evaluations.

Achievement Awards

Ten officers received Achievement Awards during 1982-83 for outstanding contributions to the Department.

Industrial Relations

In 1982, the Industrial Commission of New South Wales varied trade-based awards to implement a 38 hour week, and this had a particular effect on farm staff. The Awards now provide for the taking of an accrued rostered day off in each 20 day working cycle.

The classifications of Port Inspectors and Inspectors (Plant Diseases) were redesignated Agricultural Inspectors effective from 18th April 1983.

Special Employment Programmes

The Department participated in a number of employment and training programmes during 1982-83. These included:

Wage pause programme: 170 people were employed under three projects sponsored by the Department, and $429,147 was spent. See *WAGE PAUSE PROGRAMME 1983.*

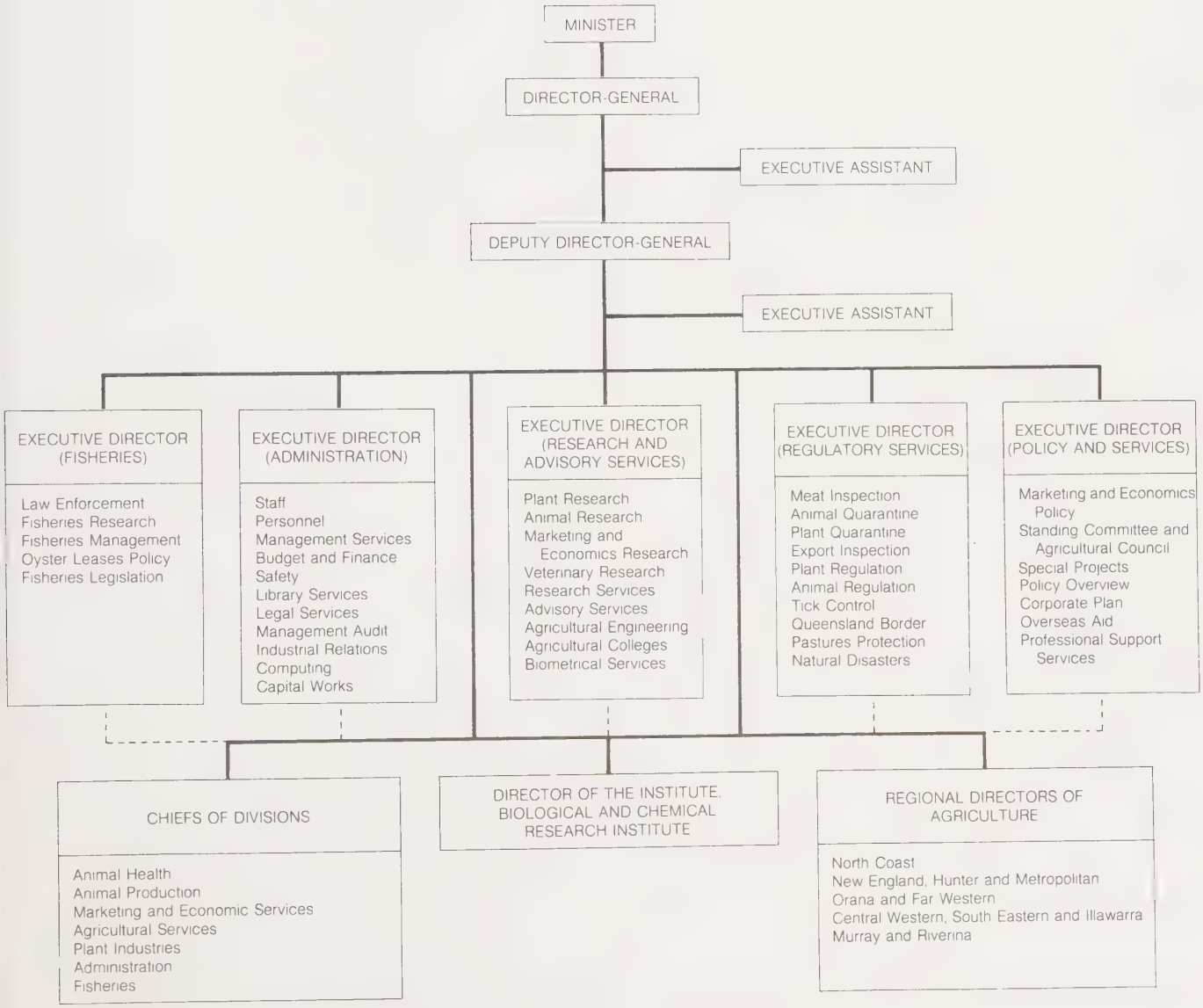
National Employment Strategy for Aboriginals Scheme: 23 people were employed in the Department under this scheme at a cost of $205,820.

Special Youth Employment Training Programme: 32 trainees were employed in this Department at a cost of $133,381.

State Youth Corps: The Department employed 135 people part-time and 6 full-time under this training scheme. The cost for 1982-83 was $142,280.

Appenticeship Scheme: The Department employed 27 apprentices, including one at Orange Agricultural College, in a range of trades.

ORGANISATION STRUCTURE—DEPARTMENT OF AGRICULTURE
(As at 30th June 1983)



Staff at 30th June 1983

Minister of Agriculture and Fisheries
Hon J. R. Hallam, M.L.C.
Director-General
G. H. Knowles
Deputy Director-General
Dr K. P. Sheridan
Executive Director (Administration)
S. J. Day
Executive Director (Research and Advisory Services)
Dr S. G. Grimmett
Executive Director (Regulatory Services)
G. R. Gregory
Executive Director (Policy and Services)
J. E. Jessup
Executive Director (Fisheries)
Dr D. D. Francois
Executive Assistant to Director-General
R. J. Jessup
Executive Assistant to Deputy Director-General
F. S. Benecke
Chief, Division of Agricultural Services
P. A. Witschi
Chief, Division of Animal Health
D. A. Dickinson
Chief, Division of Animal Production
P. T. Gilchrist
Chief, Division of Marketing and Economics
Dr C. Gellatly
Chief, Division of Plant Industries
R. A. Claxton
Chief Administrative Officer
R. T. Swan
Deputy Director, Division of Fisheries
N. A. Crozier
Director of the Biological and Chemical Research Institute
Dr A. M. Smith
Regional Director of Agriculture, North Coast Region
N. W. Vane
Regional Director of Agriculture, New England, Hunter and Metropolitan Region
Dr A. N. Smith
Regional Director of Agriculture, Orana and Far Western Region
O. R. Southwood
Regional Director of Agriculture, Central Western, South Eastern and Illawarra Region
Dr D. G. McDonald
Regional Director of Agriculture, Murray and Riverina Region
B. D. Scarsbrick

STAFF STATISTICS AS AT 30TH JUNE 1983†

	Region*					Metro-politan	Other	Total
	1	2	3	4	5			
Established positions								
Administration	8	9	7	10	11	170	4	219
Animal Production	40	49	26	47	25	53	2	242
Animal Health	180	241	48	115	66	147	0	797
Plant Industries	40	108	26	52	78	178	11	493
B. & C.R.I.	7	24	3	4	14	179	0	231
Marketing & Economics	3	7	4	4	6	46	0	70
Agricultural Services	137	308	75	216	276	105	0	1 117
Fisheries	15	19	3	22	20	183	17	279
Sub-total	430	765	192	470	496	1 061	34	3 448
Non-established positions								
National Employment Scheme for Aboriginals	2	2	3	1	9	5	0	22
State Govt Youth Training Programme	3	2	2	9	2	14	0	32
Wage Pause Project 1	15	14	0	2	0	16	0	47
2	26	23	0	5	0	17	0	71
3	0	10	8	14	10	10	0	52
State Youth Corps	26	20	8	41	79	19	0	193
Sub-total	72	71	21	72	100	81	0	417

	Region*					Metro-politan	Other	Total
	1	2	3	4	5			
Ministerial employees								
Board of Tick Control	0	0	0	0	0	0	267	267
Prickly-pear Destruction Commission	0	0	0	0	0	0	37	37
Sub-total	0	0	0	0	0	0	304	304
TOTAL	502	836	213	542	596	1 142	338	4 169

*Region 1: North Coast. Region 2: New England, Hunter & Metropolitan. Region 3: Orana & Far Western. Region 4: Central Western, South Eastern & Illawarra. Region 5: Murray & Riverina.
†Does not include the 318 vacant positions at 30th June 1983.

REGIONAL REPORTS

AGRICULTURAL REGIONS

1 North Coast
2 New England Hunter and Metropolitan
3 Orana and Far Western
4 Central West, South East and Illawarra
5 Murray and Riverina

Beef Cattle

The North Coast Region was spared from the drought (see *FOREWORD*) which severely affected the rest of the State. The beef cattle industry benefited from this situation, with thousands of cattle from drought areas being agisted on local properties. The 15 abattoirs and slaughterhouses (with one temporary closure) were in continuous operation, and the Region had a supply of young, quality cattle to meet restocking demands following drought-breaking rains. During one week of weaner sales in autumn 1983, more than 15 000 young cattle sold for an estimated $3 million.

Horticulture

Tropical and sub-tropical horticulture (see *HORTICULTURAL CROPS*) is the fastest growing industry in the North Coast Region, and it expanded about 10 per cent in 1982-83. Unfortunately, the guava industry virtually collapsed through over-production, largely as a result of unscrupulous promotion preceding development of processing and market outlets.

Dairying

Dairying remains the second leading industry in the North Coast Region, and the largest cooperative, Norco, is promoting an expansionary programme. The most recent company figures show that its 550 suppliers last year earned an average $51,250 from milk sales compared with $12,500 seven years ago, while milk production increased from 64.6 to 123.8 million litres.

Sugar

The 1982 sugar cane crop provided a record production year for the NSW Sugar Milling Co-operative. Cane crushed totalled 1 784 274 tonnes, which was 15 per cent more than the previous record crop in 1981. Average yield of two-year cane was 135.8 tonnes per hectare, compared with the five year average of 123.8 tonnes per hectare. Despite depressed prices during the year, the sugar industry remains the third major agricultural industry in the Region.

Tea

Interest in tea production continued to rise, with the Clothiers Creek plantation meeting increasing demand for a blend of locally grown and imported tea retailing at a premium price. In the Lismore area, a new plantation of 25 hectares was established and two others are under way. Research plots were established, and made excellent growth at Wollongbar Agricultural Research Centre.

Tick Advisory Programme

Advisory work is an essential part of the new cattle tick control programme (see *BEEF CATTLE*). In contrast to the old programme, the new one demands a coordinated regional effort. Advisory, veterinary and Board of Tick Control officers are all contributing to the initial objective of informing stockowners of their added responsibilities. Four new publications were printed and distributed to all stockowners in the Tick Quarantine Area,

Soybean variety trials at the Agricultural Research Station, Grafton.

and a series of meetings for groups based around dips was started.

Consultation on policies, and implementation of the new cattle tick programme, was strengthened by the establishment of a Ministerial Working Party. Membership comprises representatives of stockowner organisations, stock agents, unions and Pastures Protection Boards under the chairmanship of the Regional Director of Veterinary Services. With few exceptions, Working Party recommendations on modification of the new programme were adopted.

Land Use

Land use assessment (see *PESTICIDES & ENVIRONMENTAL STUDIES*) became a major element of the regional work programme. During 1982-83, 12 agricultural land suitability surveys were completed in response to requests from local government. These studies were essential to allow councils to proceed with drafting of new local environmental plans. The increasing recognition of the significance of agriculture to the economy of the Region highlights the need for and timeliness of this work.

Industry Liaison

Liaison with industry was a feature of the regional programme of activities during 1982-83. This was promoted through ongoing formal regional/industry organisations covering beef, bananas, avocados, and other exotic fruits; local research councils; and the newly formed Regional Consultative Committee with the Livestock & Grain Producers Association.

Boil Smut

Following the outbreak of boil smut, *Ustilago maydis,* in 1982, a disease nursery was established at Grafton Agricultural Research and Advisory Station. Forty-four commercial maize hybrids and some parent lines were screened for reaction to smut infection. Screening for at least two seasons will be required to produce reliable varietal ratings.

Overseas Projects

Involvement with overseas aid (see *OVERSEAS PROJECTS*) and trade activities is an expanding component of regional agriculture. During 1982-83, two regional officers returned from two-year postings in China and Indonesia; and three undertook short-term assignments in China and Sri Lanka. Study tours were conducted for a group of Chinese associated with the model beef cattle farm on Hainan Island, and for groups of Chinese journalists and bankers. The Director-General and nine research directors of the Thai Department of Agriculture studied regional administration and agriculture; and a group of Japanese businessmen examined tropical fruit research and the potential for supply of juices.

Region 2 New England, Hunter and Metropolitan

After almost four years of devastating drought, especially in the north and northwest, heavy rains were received throughout the Region during April 1983. Good follow-up rain saw all drought declarations in the Region lifted by mid winter.

However, the drought had taken a heavy toll on agriculture in the Region, with only 10 per cent of the normal area of wheat being harvested — the remainder either failed or was not sown. A severe shortage of irrigation water resulted in a much reduced summer crop in the northwest and reduced dairy production in the Hunter. Stock numbers in the Region were down significantly, and most stock owners were forced to handfeed at the height of the drought.

Staff at Regional headquarters, Gunnedah, processed 8125 fodder subsidy claims, paying out a total of $5.2m to stockowners.

Farmers responded to the breaking of the drought by sowing a record area of wheat, and they have good prospects of a successful crop. Pastoral conditions are the best for many years.

Advisory Services

Many of the Department's advisory programmes in the Region were discontinued or curtailed due to the drought. Much of the advisory effort was devoted to programmes on drought management strategies and feeding of livestock. A regional team was formed to advise farmers on the various drought relief schemes.

Warehouse Beetle Control Programme

The one-year warehouse beetle control programme, jointly funded by the Commonwealth and the States, finished in December 1982. A team of five inspectors based at Gunnedah surveyed the northern grain belt for warehouse beetle. Although warehouse beetle was found to be far more widespread in the north than first thought, infestations were effectively eradicated or controlled.

The Department is continuing to control warehouse beetle through regular inspections of high-risk areas.

Parthenium Weed

Several infestations of parthenium weed (see *WEEDS*) were discovered in the Narrabri and Moree areas during the year. All plants were destroyed, and the sites monitored for further outbreaks. The drought resulted in an abnormally high number of stock and fodder movements from Queensland, increasing the risk of introducing parthenium weed. The Department subsequently embarked on a major advisory campaign aimed at identifying existing outbreaks and preventing further introductions from Queensland.

Land Use Assessment

Land use (see *PESTICIDES & ENVIRONMENTAL STUDIES*) emerged as a major issue in the Region, with controversy surrounding sub-division and development proposals in the Hunter Valley and New England portions of the Region. The Department maintained its interest in preserving prime agricultural land through the Regional Liaison Officer, who continued to provide advice to the Department of Environment and Planning on the impact of development proposals on agricultural land.

Research

Poultry production research activities at Seven Hills ceased, and the station became an advisory, veterinary and regulatory institution. At Richmond, a dairy unit and a horticultural unit were integrated to form the Hawkesbury Agricultural Research Unit.

Significant staff appointments included a livestock research officer at Glen Innes to investigate the ecology and management of vertebrate pests; and a plant pathologist at Narrabri to investigate diseases of cotton.

No-till Agriculture

Together with several other organisations and private firms, the Region is committed to research into farming systems that will result in greater stability of production and a reduction in the rate of soil erosion in northern New South Wales. The no-till agriculture project (see *AGRICULTURAL ENGINEERING*) continued during 1982-83 with summer crop trials again showing a yield advantage over conventional cultivation systems. Unfortunately, the winter crop trials either failed or were not sown due to drought.

Region 3 Orana and Far Western

Drought

Except for 200 000 tonnes of wheat produced under irrigation, the 1982-83 wheat crop failed. Sheep and cattle numbers, which had been declining because of the succession of dry seasons, dropped to an all-time low. Sheep numbers declined by 35 per cent on pre-drought levels, and the cattle population was down by 40 per cent.

Like most producers in the State, the Trangie Agricultural Research Centre had to endure the drought. Because all stock were involved in research projects it was not possible to drastically reduce numbers. However, excess stock were sold or placed on agistment as the opportunity arose. Even though an area of irrigated summer fodder crop allowed a reduction in drought feeding, it was necessary to purchase wheat to feed with the 17 000 bales of lucerne produced on the Research Centre.

Advisory programmes were a continuation of those initiated earlier in the drought, and largely concerned stock nutrition, starvation problems, fodder subsidies, and other drought relief measures. Administration of Government drought aid programmes, such as the payment of fodder subsidies, became a major priority. A total of 10 330 claims were processed, involving a payment of $8,789,419.

Floods

Storms over three days in March in the Nyngan–Nymagee–Cobar area, resulted in severe flooding which caused about 50 000 sheep to perish, soil erosion, and extensive damage to fences.

Major flooding in the northern rivers system in June required flood relief measures. In conjunction with the State Emergency Services, the Department carried out an aerial fodder drop programme to feed marooned stock.

Arid Rangelands and Western Wheat Growing

A major development was the establishment of a research unit at Cobar. The aim of the unit is to develop rangeland management principles for rangeland improvement and stability, with special attention given to scrub encroachment.

The western expansion of the wheat growing area continued with further clearing. Every effort is being made to prevent the indiscriminate clearing of timber, and a programme, which will use remote sensing, was started to closely monitor the situation.

Exotic Disease Preparations

A regional contingency plan was prepared under State and national guidelines for exotic disease control and eradication. An exotic disease alert in the Northern Territory provided an ideal example to test the region's ability to react to movement controls of animals and meat entering New South Wales. Even with its large State boundary, this region responded quickly to the alert. (See *ANIMAL HEALTH*).

Pastures Protection Boards

Pastures Protection Boards were more visible to the public this year than in recent years. The significant contributions made by Boards and their staff in drought strategy and aid programmes were commendable.

During May and June, the Walgett Pastures Protection Board gave considerable assistance to the flood relief programme. Walgett and Brewarrina Boards and the Department capitalised on the flood by eradicating flood-isolated feral pigs by aerial shooting.

Feral Pig Control

Regional officers played a leading role in assisting Pastures Protection Boards with feral pig control programmes. (See *GENERAL PESTS & DISEASES*).

A coordinated project to eradicate feral pigs from the extensive Macquarie Marsh area was undertaken by Walgett, Coonamble and Canonba Pastures Protection Boards, in conjunction with the Department, the National Parks and Wildlife Service, and landholders.

Landholder group poisoning exercises, combined with aerial shooting from helicopters, resulted in almost complete elimination of feral pigs from the marsh country. Over the past three years, more than 100 000 feral pigs were exterminated, and lambing percentages in marsh sheep flocks increased significantly.

Western Wheat Improvement Programme

District agronomists continued a major on-farm applied research project aimed at improving production technology for a variety of crops. Annually, between 70 and 80 crop trials on 30 farm sites throughout the Region study wheat, oats, barley, triticale, lupins, rapeseed, soybean, sorghum and sunflowers. By far the greatest input has been directed to wheat.

The value of the programme was recently recognised by the NSW Wheat Industry Research Committee, which will provide substantial financial assistance over the next three years for plant and equipment purchases.

Radio Communications

A two-way radio base was established at Dubbo to improve communications during plague locust outbreaks and other emergency programmes. The Western Plains Zoo cooperated by allowing the aerial towers to be located within the zoo.

Problems existed for many years with interference to radio communications at Broken Hill. The radio aerials were relocated to a site outside the city in a joint enterprise between the Department, the National Parks and Wildlife Service, and the Ambulance Board. This not only improved the clarity of reception but also extended the range of this base station.

Bankers' Seminar

The annual gathering of western and central western bankers interested in agricultural trends and developments was again held at Dubbo. Advisory officers presented latest information on commodity prospects, new technology and enterprise budgets to the banking fraternity. The seminar, which annually attracts between 80 and 100 bankers, is regarded by them as an extremely valuable event.

Region 4 Central West, South East, and Illawarra

Drought dominated all activities during the 1982-83 season. All 12 Pasture Protection Boards were drought declared for most of the year, with nine still drought declared at 30th June. Prospects improved considerably towards the end of the period.

A major effort was made to meet landholders' needs during the drought with a range of special activities and the development of special advisory programmes.

More than 21 000 Commonwealth drought fodder subsidy scheme applications were processed, and nearly $20 million paid to 5634 landholders.

Advisory Services

A number of large scale interdisciplinary advisory programmes were initiated, relating to oestrogenic pastures, milk quality, serrated tussock, *Nassella trichotoma,* and sheep selection technology.

Major displays were undertaken at the Australian National Field Days, Orange, and at the Murrumbateman Small Machinery Field Days.

Consultative committees were established with the Livestock & Grain Producers Association to discuss policy issues and regional programmes of mutual interest.

Plans were made to make the Bega Dairy Demonstration Farm the base for enhanced research and advisory programmes aimed at servicing the needs of landholders in the Bega Valley. The impetus for this increased commitment was greatly aided by the financial support of the Bega Dairy Co-operative Limited.

A new advisory office was opened at Rylstone, staffed by a district agronomist and a livestock officer.

Staff at Parkes were relocated to improved facilities with a more central position.

Production of publications was considerably improved following the appointment of a publications officer to the region.

Veterinary

The entire Region was classified as provisionally free from brucellosis in August, which was well ahead of schedule. See *FOREWORD.*

A large animal holding and isolation facility was constructed at the Agricultural Research & Veterinary Centre, Orange. This facility will significantly improve the services offered by the Veterinary Laboratory.

The poultry inspection service is now operating effectively, and has increased regulatory and advisory activities.

Regionalisation of Fisheries staff was successfully implemented, and assessments of staff, general resources and needs were undertaken.

Research

A regional research directory was published which briefly describes the programmes of all research officers in the region.

New projects were started in priority areas including plant pathology, deep tillage, rejuvenation of tableland pastures, and commercial wool production.

Significant inputs continued in traditional areas of pasture research, weed research, alternative crops to wheat, crop management, direct drilling and acid soils.

Plans were made for research in the Bega Valley to be increased as a result of financial support from the Bega Dairy Cooperative Limited.

Vertebrate pest research with emphasis on feral pigs, which was to commence in 1982, was delayed by the resignation of research staff.

"On farm" research by advisory and research staff was coordinated with two specially equipped mobile units used to sow and harvest experiments.

Region 5 Murray and Riverina

Horticulture

Poor quality and presentation of Murrumbidgee Irrigation Area vegetables, and to a lesser extent fruit, has reduced prices paid to growers over the years. A combined advisory/regulatory programme to improve quality was implemented to improve vegetable and fruit quality.

Regional horticulture researchers investigating nitrogen nutrition of potatoes found that applying nitrogen just after tuber initiation increased Murray and Murrumbidgee Valley potato yields.

Competition from imported citrus juices stimulated a mechanical harvesting project. Prototype citrus harvesting equipment was imported from the United States, and is being successfully adopted.

Inservice Training

Training activities included an officer-in-charge workshop for district officers-in-charge and research station managers; legal procedures workshops for animal health regulatory staff and Pastures Protection Board rabbit inspectors; a communications workshop for newly appointed staff; an advisory conference; and workshops on short courses in conjunction with Murrumbidgee College of Agriculture, for officers using this technique.

Stubble Retention

A task force of research and advisory officers was formed to develop successful stubble retention, especially in the high yielding areas of the Region, using agronomic and engineering expertise. Developments included better wheat and lupin yields under direct drilling in the "stable agriculture through wheat and lupins" project; and evidence that direct drilling improves dryland wheat water-use-efficiency by transferring some water use from before until after flowering.

Soybean Varieties

While southern New South Wales is not a major soybean producing area, the release of four new soybean varieties from a joint Department of Agriculture–University of Sydney breeding programme is expected to lead to a greatly expanded southern New South Wales soybean crop. The new varieties are yielding 20 per cent more than previously used irrigation varieties.

Computers

The Murray and Riverina Region established a regional computer policy committee, which provided training for all advisory officers and conducted a special workshop for livestock officers.

An additional terminal was installed at Leeton advisory office, and a new microcomputer was purchased for Wagga advisory office.

Video

Emphasis continued to be placed upon development of the Region's television and video production capabilities. The Yanco studio was completed, and porta pacs located at various centres. The Region maintained regular television commitments, and undertook additional productions such as the European Wasp; House with No Steps (Lismore); and, at the request of Batlow Co-operative, a training film on fruit picking intended for itinerate fruit pickers.

The Region anticipates using educational video widely for adult education.

Water Use Efficiency and Irrigation Scheduling

The Murray and Riverina Region, with the largest proportion of the State's irrigation, is the greatest user of irrigation water. The importance of efficient, environmentally safe irrigation was highlighted during the drought, and this assisted advisory staff in promoting better water use. The region's district agronomists and horticulturists emphasised appropriate water scheduling to increase yields while saving water, time and pumping costs.

At Deniliquin, a research unit was established to service the needs of the Murray Valley, with particular emphasis on salinity problems and water use efficiency. Four positions were created and filled to research pastures, crops and soils.

Research demonstrated that 20 per cent savings in the amount of water applied to rice can be achieved, but further investigation is required for commercial implementation.

Departmental Services

New advisory offices, each including a district agronomist and a district livestock officer (sheep & wool), were opened at Hillston and Jerilderie. The creation of new district offices at Lockhart and Narrandera was announced.

Education, research and regulatory activities were further integrated at the Yanco Agricultural Institute. Ultimately, advisory and regional administration will also be integrated.

The Brucellosis Administrative Centre, Regional Veterinary Office and Regional Director of Veterinary Services were re-located to the Agricultural Research Institute and Regional Veterinary Laboratory, Wagga Wagga, making a total of five formerly separate groups now sharing the one administration.

Drought

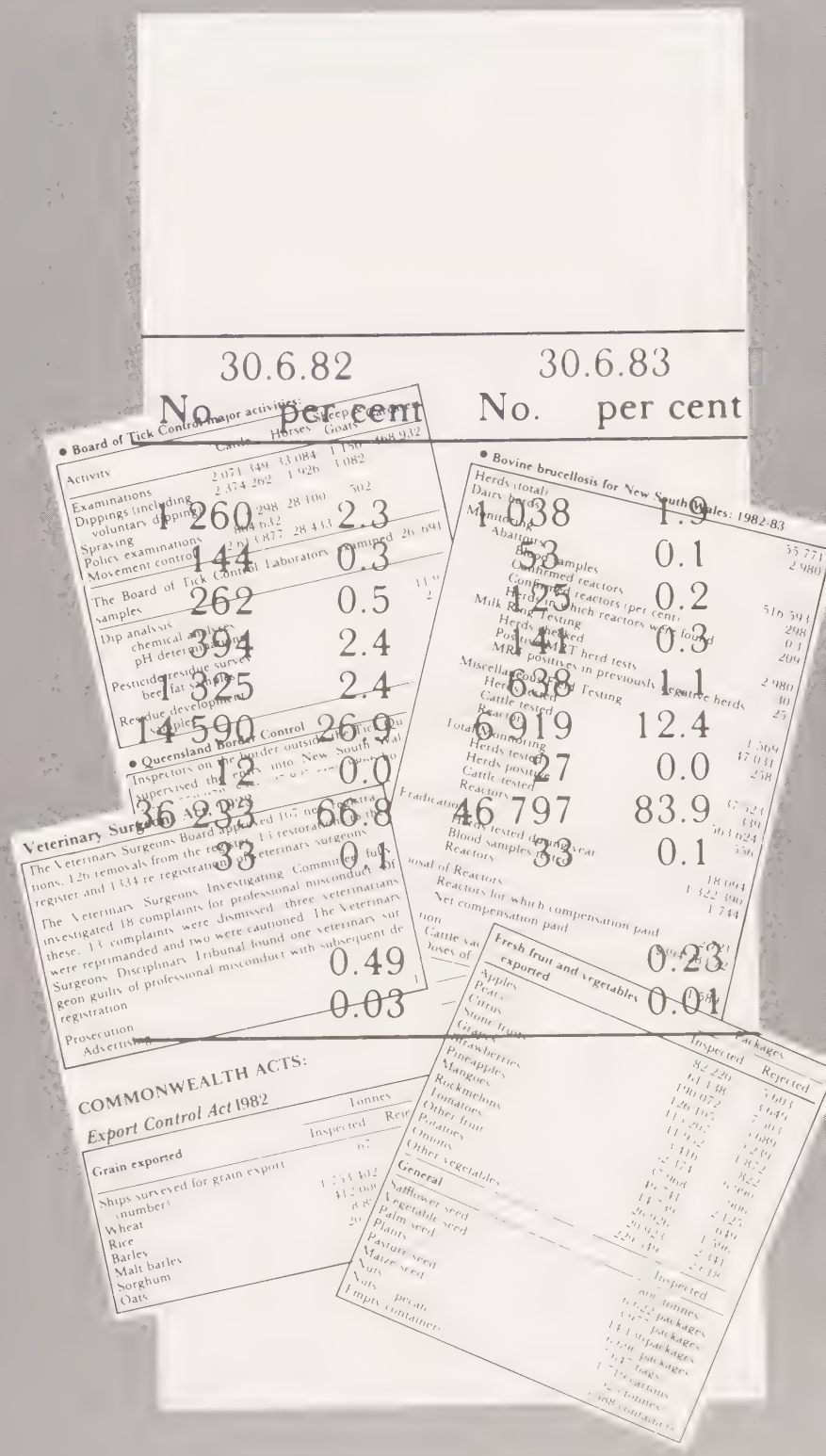
The Murray and Riverina Region was drought stricken for most of 1982-83. The drought was generally most severe in the west: Wentworth and nearby areas remained in drought for the entire year. Elsewhere, drought breaking rains commenced during autumn.

This drought affected irrigators as well as dryland farmers and graziers. Inadequate water supplies and channel capacities caused the dewatering of rice, and for the first time ever, substantial quantities of rice were cut for hay. Most animal health problems related to drought-caused nutritional deficiencies and imbalances.

Most regional officers were involved in drought fodder subsidy scheme payments. Technical assistance to landholders was provided with a well coordinated team approach using mass media, group and individual contact methods.

The generally prolonged wet period which broke the drought also created problems of plant poisoning, metabolic diseases and exposure in livestock. Ricegrowers had their most difficult harvest for many years, and wet conditions hindered sowing of winter crops.

APPENDIXES



30.6.82 30.6.83
No. per cent No. per cent
1 260 2.3 1 038 1.9
144 0.3 53 0.1
262 0.5 125 0.2
394 2.4 71 0.3
1 325 2.4 638 1.1
14 590 26.9 6 919 12.4
12 0.0 27 0.0
36 233 66.8 46 797 83.9
33 0.1 33 0.1
0.49
0.03
0.23
0.01

Appendix I Diagnostic and Testing Services

Argentine Ant Eradication Campaign

Infestations

New and re-infestations	2
Area sprayed (hectares)	36.1
Surveys (hectares)	107 772
Surveying (number of local government areas)	15

Re-surveys

Number of local government areas	9
Area (hectares)	423.5

Inquiries

Phone and personal	1581

Plant Health Diagnostic Services

Plant specimens handled for disease identification totalled 2021 and 250 for parasitic nematodes. Plant diseases recorded for the first time in New South Wales totalled over 50, and 3501 specimens were added to the Biology Branch Herbarium (Herb DAR). Outside organisations were supplied with 106 living cultures from the culture collection and 192 specimens were loaned from Herb DAR to other institutions.

Animal Health

Veterinary assistance (a total of 213 services) was provided on properties administered by the State Departments of Education, Corrective Services and Health; universities; and the Commonwealth Scientific and Industrial Research Organization.

The State Meat Inspection Service provided 650 batches of specimens for various research and teaching institutions.

Animal Health Diagnostic Services

The following two tables list:

- the origin and source of specimen consignments, other then those directly concerned with the Brucellosis Eradication Campaign, received in 1982-83; and
- the number of serum samples received for tests under the Bovine Brucellosis Eradication Campaign during the years 1975-76 to 1982-83 at the Department's veterinary laboratories.

ORIGIN AND SOURCE OF SPECIMEN CONSIGNMENTS OTHER THAN THOSE DIRECTLY CONCERNED WITH THE BRUCELLOSIS ERADICATION CAMPAIGN — 1982-83

Animal	Regional Veterinary Laboratories					Central Veterinary Laboratory	TOTAL	
	Armidale	Glenfield	Orange	Wagga Wagga	Wollongbar			
Cattle	724	1 945	636	938	1 204	4 012	9 459	44%
Sheep	729	431	1 018	1 260	112	536	4 086	19%
Pigs	249	204	228	293	179	275	1 428	7%
Poultry	124	17	154	59	124	1 026	1 504	7%
Goats	64	176	77	54	237	302	910	4%
Horses	225	288	269	206	453	132	1 603	7%
Other species	409	332	284	220	435	156	1 836	9%
Other specimens	65	292	17	47	125	16	562	3%
TOTALS	2 619	3 685	2 683	3 077	2 869	6 455	21 388	100%
Source								
Private practitioners	1 459	2 145	1 287	1 726	1 696	—		56%
Veterinary inspectors	646	880	685	743	466	—		23%
Departmental officers	378	660	631	557	699	—		20%
Others	136	—	80	51	8	—		1%
TOTALS	2 619	3 685	2 683	3 077	2 869	—		100%

NUMBER OF SERUM SAMPLES RECEIVED FOR TESTS UNDER THE BOVINE BRUCELLOSIS ERADICATION PROGRAMME

Eradication Testing	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83
Glenfield	112 700	88 500	948 720	479 330	1 324 070	1 076 960	356 805	307 290
Armidale	72 800	62 320	737 110	988 190	758 150	385 400	391 210	241 690
Orange*	—	—	—	—	—	208 207	684 480	313 920
Wagga Wagga	27 370	22 230	17 760	232 190	866 690	657 350	438 460	256 830
Wollongbar	20 000	87 220	1 029 200	923 040	463 680	265 910	241 330	205 760
Total	232 870	260 270	2 732 790	3 622 750	3 412 590	2 593 827	2 112 285	1 325 490

Abattoir Monitoring	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83
Glenfield	144 100	213 500	295 490	297 640	255 630	206 080	121 830	130 590
Armidale	64 300	103 060	110 100	134 700	189 780	236 650	105 000	128 850
Orange*	—	—	—	—	—	3 020	58 630	101 930
Wagga Wagga	21 950	40 950	26 290	15 430	18 190	21 840	28 660	24 210
Wollongbar	31 900	41 780	103 600	112 390	83 830	129 630	115 270	164 750
Total	262 900	399 290	535 480	560 160	547 430	597 220	429 390	550 330
TOTALS	495 140	659 560	3 268 270	4 270 820	3 990 020	3 191 047	2 607 675	1 875 820

* From March 1981

Australian Inoculants Research and Control Service

This service was established and is financed by the Australian Agricultural Council to control the quality of legume inoculants prior to release and to test the standard when available at retail outlets in all States. A total of 238 cultures were tested during production, and 185 passed. Of the 145 packeted inoculants tested from retail outlets, 139 reached the necessary standard.

During 1982, a special recall was made of the Group G lupin retail packeted inoculants from Western Australia. Of the 190 packeted inoculants tested, only 36 reached the necessary standard.

Chemistry Branch, Biological and Chemical Research Institute Services

(a) Analytical

Type of analysis	Number of samples	Number of analyses
Soil, chemical analysis	11 000	79 901
Soil, physical analysis	1 844	8 448
Plant tissue	5 828	68 841
Mushroom compost	139	556
Fertiliser	84	245
Water	2 259	26 935
Pesticide	361	1 308
Stock food	278	548
Stock medicine	5	8
Total	21 798	186 790

(b) Advisory

Type of assessment	Number of reports
Soil chemical fertility	2 141
Soil physical fertility	139
Plant nutrition	972
Mushroom compost	139
Fertilizer quality	51
Water quality	2 259
Pesticide formulations and residues	76
Stock food composition	185
Stock medicine composition	5
Total	5 967

(c) Land Use Assessments

Type	Location	Area (ha)
Regional studies for Department of Environment and Planning	Upper Hunter	330 000
	Lower Hunter	550 000
	Illawarra	318 000
	Sydney region	300 000
	Gosford-Wyong	20 000
Local environment plans for local government authorities	Bellingen	25 000
	Kempsey	25 000
	Nambucca	25 000
	Maclean	25 000
	Wagga Wagga City	450 000
	Bathurst City	23 000
	Baulkham Hills	15 000
Development plans for various government departments and instrumentalities	Foybrook	14 000
	Glenfield	25
	Old Government House, Sydney	1
	Byron Shire: Bangalow	16
	Medowie	100
Total		2 120 142

(d) Other Services The Biological and Chemical Research Institute's Chemistry Branch analysed 543 samples of soil, plants and water for 40 other Departments and organisations

Seed Production and Testing

Production of certified and registered seed

	tonnes
Certified Seed	
Pasture seed	
Subterranean clover	34
Lucerne	137
White clover	80
Red clover	23
Perennial ryegrass	39
Phalaris	10
Cocksfoot	17
Kikuyu	5
Hybrid maize	158
Grain legumes & oilseeds	
Soybeans	31
Mung beans	32
Oilseed rape	31
Lupins	21
Registered Cereal Seed *	
Wheat	5 184
Barley	1 052
Oats	765
Triticale	100

* 1981-82

Seed Testing

Source of Seed	Number of samples
Quarantine and regulatory	2 246
Certified and registered	824
Commercial samples	1 234
Departmental samples	2 703
Seed for identification	104
Total	7 111

Appendix II Summary of Departments Regulatory Activities under various State and Commonwealth Acts

STATE ACTS

Agricultural Holdings Act, 1941

Matters referred to Minister for Agriculture and Fisheries	3
Disputes referred to Agricultural Committees	2

Apiaries Act, 1916

Apiaries registered (as at 31.3.83)	4 152

Cattle Compensation Act, 1951

Compensation was paid for 3276 cattle ordered to be destroyed on account of suspected disease and for 10 carcases condemned during meat inspection.

Diseases on which claims were paid follow:

Diseases	Claims	Cattle and carcases
Brucellosis	647	2 721
Tuberculosis	102	551
Johne's disease	11	11
Tick fever	3	3

Chicken Meat Industry Act, 1978

Agreements registered	430
Disputes	4

Dairy Industry Marketing Authority Act, 1979

Notices issued	104

Farm Produce Agents Act, 1926

Licences issued	185
Complaints received	8

Fertilizers Act, 1934

Re-registrations	389
New registrations	162
Registrations refused	13
Samples analysed	63

Horticultural Stock & Nurseries Act, 1969

Nurserymen registered	3323	(amended figure for previous year 2750)
Resellers registered	4216	(amended figure for previous year 3800)

Meat Industry Act, 1978

The State Meat Inspection Service carried out antemortem and postmortem of livestock at all abattoirs and slaughterhouses to ensure production of clean, wholesome meat. Additionally, 32 knackeries and kangaroo depots throughout the State were inspected to ensure the staining of pet meat and maintenance of hygiene standards.

Inspections of carcases and viscera *(Section 22(3))

Adult cattle	1 968 825
Calves	286 225
Sheep, lambs, goats	8 628 692
Pigs	1 098 781

* Includes inspections at export abattoirs under the *Commerce (Trade Descriptions) Act*

Further inspection of meat from other States and New Zealand (Section 43)

	Carcases	Piecemeats (kg)
Beef and buffalo	165 218	16 198 613
Calves/veal	164 337	490 418
Sheep and goats	454 065	578 375
Pigs and pork	96 440	5 384 140
Processed meats		8 964 249
Venison		19 085

Prosecution: 1

Pesticides Act, 1978

Applications for registration or approval	
New products	388
Additional labels	515
Additional containers	83
Permits	220
Registration assessments	12
Samples analysed	34

Plant Diseases Act, 1924

Notices issued for pest & disease control	354
Prosecutions	41
Inspections	
Orchards, plantations, vineyards	
— For advice/regulatory action	8 250
— For planting statistics only	1 327
Fruit shops and stalls	5 942
Grain storages and processing premises	1 077*
Nurseries	2 384
Resellers	2 759
Home gardens	23 899

* excluding special warehouse beetle programme

Detections of bunchy top in banana plantations	1 605

Packages detained at markets for non-compliance with regulations

	Packages	Bulk bins
Apples	35 617	48
Pears	23 953	14
Citrus	11 299	6
Grapes	792	
Rockmelons	5 774	
Tomatoes	12 451	
Potatoes	66 786	48
Bananas	2 384	
Mangoes	617	
Stone Fruit	98	
Avocado	793	
Lettuce	2 178	
Carrots	4 121	
Pumpkin	1 537	74
Onions	4 696	
TOTAL	173 096	190

Packages castaway (under Farm Produce Agents Act) 3 050

Potato Growers Licensing Act, 1940

Growers licensed	374

Poultry Processing Act, 1979

Poultry plants registered	96
Water retention tests carried out	349
Inspection visits	2 064
Prosecutions:	
Excessive water retention in carcases	4

Registration of Stock Brands Act, 1921

Applications:	New South Wales	1 060
	Victoria	29
	Australian Capital Territory	17
Transfers		287
Re-gazettal		56

Stock (Artificial Insemination) Act, 1948

Cattle: Three centres and two sub-centres remained licensed. Five certificates of competency were issued.

Sheep: Two centres and one sub-centre remained operative during the year.

Stock (Chemical Residues) Act, 1975

Samples of fat collected from cattle slaughtered at 22 abattoirs were analysed for the presence of chemical residues. In all, 1123 samples were taken, 10 683 of these were analysed and 8262 (75 per cent) of all samples were free of residues.

Stock Diseases Act, 1923

• Quarantine was applied for the following diseases:

Disease	Number of Quarantines Properties	Stock
Anthrax	17	18 960
Brucellosis in cattle	233	
Lice in sheep	573	633 704
Ked in sheep	0	
Lice and ked in sheep	1	16 683
Tuberculosis in cattle	33	
Tuberculosis in pigs	0	0
Tuberculosis in poultry	3	
Tick fever in cattle	1	118

Prosecutions:

A total of 30 persons involving 48 charges were prosecuted resulting in fines totalling some $14,000. Prosecutions were for:

Lice in sheep	12
Brucellosis in cattle	2
Swill feeding of pigs	4
Tail tagging	8
Movement control of pigs	1
Queensland border crossings	2
Tick Quarantine Area	1

The control of brucellosis and tuberculosis in cattle is summarised in the standard format adopted for the National Brucellosis and Tuberculosis Eradication Campaign.

• Bovine brucellosis for New South Wales: 1982-83

Herds (total)	55 771
Dairy herds	2 980
Monitoring:	
Abattoirs	
Blood samples	516 593
Confirmed reactors	298
Confirmed reactors (per cent)	0.1
Herds in which reactors were found	209
Milk Ring Testing	
Herds checked	2 980
Positive MRT herd tests	30
MRT positives in previously negative herds	25
Miscellaneous Field Testing	
Herds tested	1 569
Cattle tested	47 031
Reactors	258
Total Monitoring	
Herds tested	37 523
Herds positive	339
Cattle tested	563 624
Reactors	556
Eradication:	
Herds tested during year	18 094
Blood samples tested	1 322 390
Reactors	1 744
Disposal of Reactors:	
Reactors for which compensation paid	2 721
Net compensation paid	$394,283.72
Vaccination:	
Cattle vaccinated with Strain 19	1 589
Doses of Strain 45/20 used	0

Infection data: progress

	30.6.82 No.	per cent	30.6.83 No.	per cent
Herd status				
Not assessed	1 260	2.3	1 038	1.9
Suspect	144	0.3	53	0.1
Infected	262	0.5	125	0.2
Restricted	394	2.4	141	0.3
Provisionally clear	1 325	2.4	638	1.1
Tested negative	14 590	26.9	6 919	12.4
Monitored negative	12	0.0	27	0.0
Confirmed free *	36 233	66.8	46 797	83.9
Accredited free	33	0.1	33	0.1
Prevalence (per cent)				
Herd		0.49		0.23
Individual		0.03		0.01

* Confirmed Free herds can move anywhere in Australia. They only need a Form 3 and the approval of an inspector.

• Bovine tuberculosis for New South Wales

	1981-82	1982-83
Basic statistics:		
No. of cattle herds	64 017	63 338
No. of cattle	5 700 941	5 213 000
Monitoring:		
Abattoirs		
No. of cattle slaughtered	1 907 900	2 255 050
No. with TB lesions (presumed plus confirmed)	31	17
No. successful tracebacks to herd of origin	30	15
Percentage of successful tracebacks	96.9	88
Testing:		
No. cattle tested	22 879	35 875
No. reactors	74	31
Total no. herds tested	193	295
No. herds confirmed infected	8	28
No. herds tested from traceback	21	14
Eradication:		
No. infected herds (at beginning of year, plus those detected during the year)	39	54
No. herds tested	39	51
No. cattle in infected herds	12 934	14 169
No. individual cattle tests	25 634	23 829
No. reactors	409	194
Disposal of Reactors:		
No. reactors detected	482	275
No. reactors slaughtered	479	275
No. reactors autopsied (meatworks and field)	479	275
No. reactors with lesions	328	133
No. reactors for which compensation paid	247	486
No. casual cases for which compensation paid	12	9
Net compensation paid	$68,660.50	$187,628.28
Laboratory:		
No. bacteriological accessions	57	38
No. with confirmed tuberculosis	33	23
Infected Herds:		
No. infected herds at beginning of year	13	21
No. cattle in infected herds at beginning of year	2 704	7 955
No. infected herds at end of year	19	15
No. cattle in infected herds at end of year	7 931	3 744
No. reactors with lesions at most recent herd test in all known infected herds.	267	15
Prevalence (per cent):		
Herd	0.02970	0.02400
Individual	0.00477	0.00029

• Board of Tick Control major activities:

Activity	Cattle	Horses	Sheep & Goats	Carcases
Examinations	2 071 349	33 084	1 150	468 932
Dippings (including voluntary dipping)	2 374 262	1 926	3 082	
Spraying	4 298	28 100	502	
Policy examinations	864 632			
Movement control	2 613 877	28 433		

The Board of Tick Control Laboratory examined 26 691 samples.

Dip analysis	
chemical analyses	11 965
pH determinations	2 372
Pesticide residue survey	
beef fat samples	11 350
Residue development	
samples	1 004

• Queensland Border Control

Inspectors on the border outside the Tick Quarantine Area supervised the entry into New South Wales of 313 484 cattle, 558 978 sheep, 27 825 pigs, 8866 horses, 1821 goats and 530 other animals.

Stock Foods and Medicines Act, 1940

Stock Medicines

Products sampled	88
Products analysed	76
Re-registrations	1 045
New preparations	129
Outstanding	932
Withdrawn	78
Refused	5
Prosecutions	Nil

Stock Foods

Registrations	690
Products sampled	314
Products analysed	271
Prosecutions	12

Swine Compensation Act, 1928

Compensation was paid for three pig carcases condemned during meat inspection because of septicaemia.

Veterinary Surgeons Act, 1923

The Veterinary Surgeons Board approved 107 new registrations, 126 removals from the register, 13 restorations to the register and 1334 re-registrations of veterinary surgeons.

The Veterinary Surgeons Investigating Committee fully investigated 18 complaints for professional misconduct. Of these, 13 complaints were dismissed, three veterinarians were reprimanded and two were cautioned. The Veterinary Surgeons' Disciplinary Tribunal found one veterinary surgeon guilty of professional misconduct with subsequent deregistration.

Prosecution:	
Advertising	1

COMMONWEALTH ACTS:

Export Control Act 1982

Grain exported	Tonnes	
	Inspected	Rejected
Ships surveyed for grain export (number)	67	37
Wheat	1 753 402	—
Rice	412 000	—
Barley	8 899	—
Malt barley	20 600	—
Sorghum	3 431	—
Oats	13 483	—

Fresh fruit and vegetables exported	Packages	
	Inspected	Rejected
Apples	82 220	5 603
Pears	61 138	3 649
Citrus	190 072	7 503
Stone fruits	126 105	5 689
Grapes	115 207	9 239
Strawberries	11 952	1 872
Pineapples	3 416	822
Mangoes	32 374	6 990
Rockmelons	37 968	906
Tomatoes	49 741	2 125
Other fruit	14 789	649
Potatoes	26 926	1 596
Onions	20 923	2 341
Other vegetables	229 349	2 618

General	Inspected
Safflower seed	800 tonnes
Vegetable seed	6 622 packages
Palm seed	3 977 packages
Plants	14 136 packages
Pasture seed	6 696 packages
Maize seed	7 647 bags
Nuts	1 719 cartons
Nuts — pecan	520 tonnes
Empty containers	3 588 containers

• Animal Quarantine

Animal imports	
Landing permits issued	1 488
Animals landed	
Domestic livestock	1 060
Animal pets	1 191
Aquarium fish	2 388 381
Bees	267
Others	1 915
Animals entering quarantine	
Dogs and cats	1 012
Horses and donkeys	132
Semen imported	
Cattle (doses)	23 300
Dog (doses)	82
Ships' pets	
Animals bonded	362
Fish bonded	1 453
Animal product imports	
Landing permits issued	2 834
Main products landed (tonnes)	
Tinned meats	847.3
Chilled/frozen meat	2 710.9
Casings	764.7
Cheese	6 583.2
Fish products	2 189.3
Glue pieces	311.9
Fish/meat meal	4 032.8
Stock feed	1 734.4
Wool	583.5
Animal hair	441.0
Prohibited materials seized	
Meat and meat products (kg)	3 121
Cheese (kg)	777
Milk products (kg)	840
Eggs	3 018
Egg products (kg)	627
Other materials (kg)	264
Rawhide pieces	615
Animal exports	
Health certificates issued	1 884
Main exports	
Domestic livestock	5 543
Animal pets	2 049
Birds and poultry	1 365
Day-old poultry	432 452
Hatching eggs	394 302
Others	102 068

● **Plant Quarantine**

Exotic pest interceptions included:	
Giant African snail, *Achatina fulica*	3
Woodwasp, *Siricidae*	5
Carpenter ant, *Camponotus pennsylvanicus*	1
Khapra beetle, *Trogoderma granarium*	1
Warehouse beetle, *Trogoderma variabile*	1
Larger cabinet beetle, *Trogoderma inclusum*	1
Yellow jacket wasp, *Vespula pennsylvanica*	1
Trogoderma spp. — species indeterminate	2
Dampwood termite, *Zootermopsis angusticollis*	2
Wood borer, *Heterobostrychus aequalis* (adults only)	52
Exotic molluscs	9

Nursery stock:	
Ornamentals to approved quarantine houses	28 237
Plant Quarantine Station — number of lines, being:	
Seeds for Department and universities	606
Seeds for private imports	66
Fruit trees for Department	87
Other imports for Department	—
Plants for private importers	7 835
TOTAL, Plant Quarantine Station	8 594

Quarantine Act 1908

	Plant		Animal
Prosecutions:			
Quarantine Act	1		2
Customs Act	13		22
Both Acts	132		55
Quarantine fees collected	$747,207		$213,628.50
Passenger clearance:			
By sea:			
Vessels met		109	
Passenger arrivals		67 189	
Quarantine interceptions		807	
By air:			
Flights met		7 796	
Passenger arrivals		1 257 112	
Quarantine interceptions		180 546	
Parcels post:			
Parcels examined		19 838	
Parcels needing quarantine action	5 953		1 052
Import permits issued:	50 489		
Cargo:			
General:			
Vessels attended	475		
Seed sampled for examination	734		
Vehicles steam cleaned	885		
Containers:			
Vessels discharged Sydney Port & Botany	1 548		
Containers discharged	3 463		
Action on containers:			
FCLs immediate delivery		89 493	
FCLs & LCLs depot inspection		67 790	
FCLs follow up inspections		1 165	
Infringements revealed		70	
International airport terminal (tonnes)		58 855	
Richmond RAAF terminal (tonnes)		6 379	
Timber imports (cubic metres)		402 889	
Quarantine treated (cubic metres)		2 308	
Approved premises for processing		198	

* FCL: full container load; LCL: less than full

Appendix III Financial Summary 1982–83

The Department's main funding came from the State Treasury as an allocation from the Consolidated Fund Recurrent Expenditure Account (CFREA). Receipts from the administration of various Acts of Parliament, as well as contributions from the Commonwealth towards certain specified functions, were paid into Consolidated Fund Recurrent Receipts (CFRR). Expenditure during 1982-83 by the Department totalled $96,005,219 from CFREA, while revenue was $17,676,250. The expenditure of $96,005,219 financed functions including:

Cattle tick control	9,648,055
Agricultural education and advisory services	9,306,123
Biological and chemical research and analysis	5,197,925
Agricultural research	13,331,580

and with the amalgamation of the State Fisheries Department with the Department of Agriculture during 1982-83:

State fisheries operations	5,675,260

Advisory Services and Applied Research

Funds provided by industry bodies, semi-government authorities, private companies and the Commonwealth Special Research Grants were utilised to fund many research programmes and some advisory services conducted by the Department. The Department relied heavily on these sources of finance for research work, which received $3,454,220 in 1982-83. Expenditure for the year amounted to $2,939,060.

Capital Works Programme

Funds for the Department's capital works programme were provided from the State Treasury's Consolidated Fund Capital Expenditure Account. Expenditure during 1982-83 on capital works was $500,000 from the CFCEA.

Drought Relief Payments

Drought Relief payments were made during 1982-83 from State Treasury funds provided from the CFREA amounting to $23,333,965, and also from the Commonwealth Government in the form of Fodder Subsidy Scheme payments of $46,886,958.

Comparative Statement of Expenditure

Account	1981-82 $	1982-83 $	Variation $
Consolidated Fund Recurrent Expenditure	76,085,931	96,005,219	19,919,288 +
Consolidated Fund Capital Expenditure	650,000	500,000	150,000 −
Special Deposits Accounts	29,390,473	80,908,305	51,517,832 +
	106,126,404	177,413,524	71,287,120

ACCOUNTS OF DEPARTMENT OF AGRICULTURE FOR THE YEAR 1982-83

The cost of maintaining the Department was met from the CFREA whilst capital expenditure on buildings, equipment and permanent improvements to departmentally owned property was a charge against the CFCEA.

In addition, the Department was assisted in financing some research and development and control of insect pests and animal diseases, by levies on industry and by grants from the Commonwealth, semi-government, public and private organisations. These funds were used via a large number of Special Deposits Accounts (SDAs). The operations on some of the more significant SDAs are detailed later in this report.

Consolidated Fund Recurrent Expenditure for 1982-83 included $5,675,260 for Fisheries and $4,143,908 for Group Vote items which were not included in the 1981-82 figures.

SDA Balance for 1982-83 included $46,886,958 for the Commonwealth Fodder Subsidy Scheme, and $4,436,000 for Fisheries Accounts which were not included in the 1981-82 figures.

Consolidated Fund Capital Expenditure 1982-1983
(formerly titled General Loan Expenditure)

	$
Orange Agricultural Research and Veterinary Centre — laboratory/administration building	13,679
Relocation of seed testing facilities — McKell Building, Rawson Place, Sydney	11,000
Purchases of plant and equipment — Total Department	475,321
Total expenditure 1982-83	500,000

The 1982-83 allocation for the Department from the CFCEA vote was $500,000 compared to the 1981-82 allocation of $650,000 (which was fully expended).

Consolidated Fund Recurrent Expenditure 1982-83

The following is a comparative statement of expenditure from CFREA for the previous two years:

Budget Heading	1981-82 $	1982-83 $	Variation $
Administration	7,459,604	12,982,191§	5,522,587 +
Biological and Chemical Research Institute	4,560,944	5,197,925	636,981 +
Plant industries*	11,502,577	13,908,324	2,405,747 +
Research services	11,868,222	13,331,580	1,463,358 +
Advisory services	8,814,054	9,306,123	492,069 +
Animal health & production	22,483,987	25,955,761‡	3,471,774 +
Cattle tick control	9,396,543	9,648,055	251,512 +
Fisheries	—	5,675,260†	5,675,260 +
	78,085,931	96,005,219	19,919,288

* The budget heading "Plant industries" replaces the 1981-82 budget headings of "Plant industry" and "Horticulture".

† This is a new item resulting from the amalgamation of the New South Wales State Fisheries Department with the New South Wales Department of Agriculture. The 1981-82 expenditure by the New South Wales State Fisheries Department was $6,414,169.

‡ Includes the State contribution to the National Bovine Tuberculosis and Brucellosis Eradication Campaign of $2,500,000. This amount was transferred to SDA 32. Details are provided later in this report.

§ This figure includes the following amounts which were administered by other Departments on behalf of the Department of Agriculture before the 1982-83 financial year:

Expenditure Heading	Department	Amount $
Advertising and publicity	Premier's Department	29,291
Postal and telephone Expenses	Public Works Department	1,965,356
Gas and electricity	Public Works Department	1,364,470
Printing and stationery	Government Printing Office	784,791
		$4,143,908

SPECIAL PROJECTS OR SERVICES WITHIN THE DEPARTMENT

Transactions on some of the more significant special projects or services within the Departments' operations during 1982-83 are detailed in the following section.

Graham Park Breeding Services, Berry

From 1st July 1980 the operations of the Artificial Stock Breeding Service, Berry, were transferred from the Dairy Industry Marketing Authority of New South Wales to the Department of Agriculture and renamed Graham Park Breeding Services. Details of income and expenditure for the year ended 30th June 1983 are:

Income	$	$
Berry semen sales	316,113	
Sale of goods and liquid nitrogen	114,737	
Miscellaneous fees	98,170	
Surplus — Consignment Semen Working Account	2,540	
Total income		531,560
Expenditure		
Salaries and payments in the nature of salaries	292,382	
Subsistence and transport expenses	40,575	
Stores	145,033	
General operating expenses	152,697	
Plant and equipment	6,542	
Purchase of motor vehicles	11,721	
Purchase of bulls	30,200	
Total expenditure		679,150
Deficit		147,590
Add: Other Income — Sale of Government Property		27,089
NET DEFICIT FOR 1982-83		120,501

As at 30th June 1983, outstanding debtors totalled $135,499 whilst expenditure commitments amounted to $9,453.

Commonwealth Grant for Colleges of Advanced Education

Expenditure on current allocations was:

	$	$
Annual allocation — 1982		
Expenditure to 30th June 1982	6,468	
Expenditure 1982-83		
Shed	17,810	
Purchase of equipment	7,311	31,589
Annual allocation — 1983		
Expenditure 1982-83		
Horticultural unit	725	
Purchase of equipment	15,710	16,435
Total expenditure to 30th June 1983		48,024

In addition to the above expenditure during 1982-83, the unexpended balance of the 1980 annual allocation, $42, was refunded to the Commonwealth.

Special Employment Schemes

The Department participated in the following Commonwealth funded employment and training schemes during 1982-83:

Scheme	Expenditure
Wage Pause Employment Programme	$429,147
Special Scheme to Promote Youth Employment and Employment Generally — State Apprenticeship Scheme	$277,221
Special Youth Employment Training Programme — State Participation	$175,958
Special Scheme to Promote Youth Employment and Employment Generally — State Youth Corps	$152,254
National Employment Strategy for Aboriginals	$205,819

Australian Development Assistance Bureau Working Account

The finance for Australian Development Assistance Bureau projects is provided by the Bureau. In addition to providing technical expertise and advice, departmental personnel manage the projects in various countries. Details of the operations of the SDA for the assistance are given below for the year ending 30th June 1983.

	$	$
Balance as at 1st July 1983		397,915*
Receipts during 1982-83		539,829
Advances: miscellaneous projects (unexpended)		15,709
		953,453
Less expenditure		
	$	
Support unit — costs	6,755	
Salary & allowances	91,578	
Travelling expenses	64,680	
Materials & equipment	323,948	
Other expenses	38,356	
Overhead expenses	46,811	572,128
Balance as at 30th June 1983		381,325

All the above expenditure relates to the Sri Lanka — Lower Uva Phase II Project except for $1,295 of the support unit costs.

* Adjustment of 30th June 1982 balance which was incorrectly shown in 1981-82 as $1,119,267. The 1st July 1981 balance was inadvertently double counted in the receipts figure for 1981-82.

Australian Inoculants Research & Control Service — Working Account

The Australian Inoculant Research and Control Service, which operates from the Horticultural Research Station, Gosford, maintains quality control in legume inoculants.

Following is a statement of receipts and payments for the above account for the year ended 30th June 1983.

	$	$
Balance as at 1st July 1982		328*
Receipts —		
Contribution from —		
New South Wales	23,310	
Queensland	9,450	
South Australia	9,450	
Tasmania	1,260	
Victoria	9,450	
Western Australia	10,080	
Industry sources	6,000	69,000
		69,328
Payments —		
Salaries	46,842	
Operating expenses	17,198	64,040
Balance as at 30th June 1983		$ 5,288

* A cash advance of $6,000 provided by the Department in 1981-82 is to be repaid in 1983-84.

Cattle Compensation Fund

	$	$
Balance as at 1st July 1982		3,243,687
Receipts —		
Interest	416,513	
Levies	106	
Stamp duty	209,996	
Commonwealth contributions		
Tuberculosis reactors	31,176	
Brucellosis campaign	260,883	918,674
		4,162,361
Payments —		
Compensation —		
National brucellosis	394,284	
National tuberculosis	171,845	
Other diseases	30,354	
Other payments	19,974	
	589,137	
Administration costs of Department of Agriculture	42,174	631,311
Balance in fund at 30th June 1983		3,531,050

The above closing balance of $3,531,050 includes investments currently held with the Treasury of:

$3,000,000 at 14.49% per annum
$ 250,000 at 14.78% per annum

Cattle Compensation Payments 1982-83

	Disease Group				Ex-Gratia Claims
	Brucellosis	Johnes disease	Tuberculosis	Tick Fever	
Number of claims					
Reg 5	647	11	92	3	24
Reg 6	—	—	10	—	—
Total	647	11	102	3	24
Number of animals					
Reg 5	2 721	11	541	3	33
Reg 6	+	—	10	—	—
Total	2 721	11	551	3	33
Payment details	$	$	$	$	$
Reg 5	394,284	1,850	170,210	1,184	19,974
Reg 6	—	—	1,635	—	—
Total	394,284	1,850	171,845	1,184	19,974

Eradication of Bovine Tuberculosis & Brucellosis Working Account

	$	$
Balance in fund at 1st July 1982		84,372
Income		
Contributions by New South Wales		2,500,000
Contributions by Commonwealth		5,446,409
Fees for services rendered		724
Sale of assets		277
Expenditure		
Salaries, wages and associated charges	6,262,731	
Travelling expenses	69,886	
Motor vehicle running costs	398,290	
Postage and telephone	204,094	
Freight and cartage	59,655	
Stores and equipment	318,835	
Office requisites and printing	17,007	
Rent and rates	166,133	
Repairs and maintenance	13,385	
Cattle tags	35,221	
Computer running and maintenance	31,796	
Payments to private practitioners for brucellosis sampling	20,072	
Administration costs	200,000	
Purchase of capital plant and equipment	76,418	
Purchase of motor vehicles	50,224	
Land, building and improvements	10,846	
Other expenses	20,774	7,955,367
		$76,415

Against the balance of $76,415 quoted above, must be considered firm commitments of $126,653 for capital items and $94,500 for other items. The commitment of $126,653 for capital items is made up of:

Replacement motor vehicles	66,083
Plant and machinery	60,570
	$126,653

The Commonwealth's contribution for 1982-83 was $2.17 for each $1 contributed by the State.

Swine Compensation Fund

Following is a summary of operations on the Swine Compensation Fund for year ending 30th June 1983

	$	$
Balance in fund at 1st July 1982		1,465,979
Receipts —		
Interest		174,130
		1,640,109
Payments —		
Compensation	257	
Administration Costs	6,750	
Research Costs	70,231	77,238
Balance in fund 30th June 1983		1,562,871

The above closing balance includes investments currently held with the Treasury of:

$1,418,000 at 15.39% per annum
$57,000 at 15.92% per annum.

Meat Inspection Service

The Meat Inspection Service is administered under the Meat Industry Act, which provides for a scale of fees. Following is a statement of receipts and costs associated with this Service for the year ended 30th June 1983.

	$	$
Receipts from inspection fees		6,143,955
Less —		
Salaries, wages and associated items	7,198,425	
Travelling expenses and vehicle running costs	601,546	
General stores, freight and cartage	19,683	
Books, periodicals and printing	1,819	
Rent, cleaning, electricity, phone and postage	6,284	
Laundry expenses	31,957	
Sundry expenses	1,178	
Overhead expenses*	1,393,049	9,253,941
Net deficit on Meat Inspection Service		3,109,986

* Overhead expenses of $1,393,049 include administration charges, workers' compensation insurance premium, payroll tax, and employers' contribution to superannuation funds not charged direct.

Veterinary Surgeons Act, 1923

This Act provides for the establishment of a Board of Veterinary Surgeons for New South Wales. Fees and penalties collected are paid to the credit of Consolidated Revenue Fund from which the administrative expenses of the Board are met.

Below is a statement of receipts and payments for the year ended 30th June 1983.

	1981-82 $	1982-83 $
Receipts —		
Roll fees	44,470	73,891
Registration and restoration fees	3,360	5,377
Application fees	—	—
Complaint fees	460	280
Examination fees	60	
	$48,350	$79,748
Payments —		
Salaries etc.	32,999	37,165
Board fees	3,020	3,000
Board members travelling	2,149	2,145
Investigating committee — costs	773	730
Printing	208	3,030
Advertising	—	—
Legal fees	2,440	3,615
Disciplinary Tribunal Expenses	—	6,771
Examination expenses	640	—
Refunds — complaint fees	320	360
General expenses	1,522	2,695
	44,071	59,511
Excess of receipts over payments	4,279	20,237
	$48,350	$79,748

Noxious Insects Destruction Account During 1983

The Noxious Insects Act provides for the striking and collection of a levy under certain specified conditions. Moneys received from the levy are paid into a Special Deposits Account and applied by the Minister for purposes of the Act.

Following is a financial statement of the operations of this account during 1982-83.

	$	$
Balance at 1st July 1982		1,271,092
Receipts —		
Levies	1,148,719	
Sale of insecticides	33,247	
Sale of assets	4,625	1,186,591
		2,457,683
Payments —		
Contribution to Australian Plague Locust Commission	421,795	
Equipment purchases	32,533	
Insecticide purchases	226,713	
Motor vehicle purchases	—	
Maintenance/repair of equipment	5,134	
Helicopter/aircraft hire	4,841	
Materials & sundry purchases	4,345	
Motor vehicle running costs	12,750	
Repayment of treasury loan	500,000	
Salaries	32,836	
Sundry expenses	3,899	
Travelling expenses	3,883	1,248,729
Balance at 30th June 1983		1,208,954

During 1982-83 the fund repaid $500,000 to the Treasury as repayment of $250,000 received in 1978-79 and part payment of a $1,200,000 advanced received in 1979-80. A further amount of $412,000 received from the Treasury in 1982-83 means the total debt repayable to the Treasury is now $1,362,O00. It is anticipated that $1,000,000 of this debt will be repaid in 1983-84.

Commercial Fisheries Exploration and Development Fund

This fund is a Special Deposits Account funded by State contributions for the benefit of the commercial fishing and oyster farming industries.

Following is a statement of receipts and payments of this account for the year ending 30th June 1983.

	$	$
Balance as at 1st July 1982		1,550,383
CFR Grant 1982-83		845,414
Receipts — miscellaneous projects		150,367
		2,546,164
Less expenditure		
Salaries and allowances	1,546,785	
Rent & rates	126,501	
Property maintenance	5,034	
Travelling	81,832	
Maintenance of vehicles & launches	313,182	
Printing & advertising	68,599	
Postal & telephone	17,149	
Gas and electricity	33,057	
Fees for services rendered	58,879	
Plant, craft & equipment	243,450	
Other expenses	21,958	
Overheads	12,118	2,528,544
Balance as at 30th June 1983		$17,620

Inland Fisheries Fund

The Inland Fisheries Fund is a Special Deposits Account used to meet the cost of administration, development and protection of the inland fisheries.

Funds are provided by the sale of inland angling licences, sale of fish from trout hatcheries and from State contributions.

Following is a statement of receipts and payments of this account for the year ending 30th June 1983.

	$	$
Balance as at 1st July 1982		98,737
Receipts		
CFR Grant 1982-83	1,005,381	
Licences	591,125	
Sale of vehicles and craft	30,251	
Rents	6,571	
Sale of fish	5,218	
Commonwealth and other grants	55,216	
Miscellaneous	3,756	1,697,518
		1,796,255
Payments		
Salaries and wages	965,706	
Payroll tax and workers' compensation insurance	98,646	
Employers' superannuation contribution	86,076	
Maintenance and running costs of motor vehicles & launches	125,563	
Travelling expenses	54,469	
Stores and materials	39,001	
General expenses	26,091	
Fish food	17,961	
Plant and equipment	147,023	
Capital debt charges	11,190	
Postal & telephone	51,284	
Printing	9,644	
Gas and electricity	17,779	
Property maintenance	12,780	
Capital works	12,536	
Repayment of advances from Treasury	5,687	1,681,436
Balance at 30th June 1983		$114,819

Tidal Angling Fund

The Tidal Angling Fund is a Special Deposits Account funded by State contributions for the investigation, survey, management, development and protection of the sport and game fisheries in territorial waters other than inland waters.

Following is a statement of receipts and payments of this account for the year ending 30th June 1983.

	$	$
Balance as at 1st July 1982		1,782
CFR Grant 1982-83		164,160
Receipts — miscellaneous projects		46,353
		212,295
Less expenditure		
Salaries & allowances	135,356	
Travelling expenses	5,036	
Maintenance of motor vehicles & craft	6,081	
Purchase of plant, craft & equipment	32,855	
Fees	15,192	
Transport	1,095	
Other expenses	4,651	
Overheads	2,803	203,069
Balance as at 30th June 1983		$9,226

Fund Created by Wheat Marketing (Barring of Claims) Act, 1929

The Wheat Marketing (Barring of Claims) Act, 1929 barred all claims under wheat marketing operations conducted by the Government in earlier years and directed that after the making of specified grants for research purposes, surplus moneys from operations be paid to a fund for investment. Income from investments may be applied, as the Minister of Agriculture and Fisheries determines, towards agricultural education and research. Financial results for 1982-83 are as follows:

Revenue account for year ended 30th June 1983

	$		$
Donation — Grain Handling Authority	500	Commitments entered into during the year	8,736
Interest on investments & savings	9,318	Bank fees	2
		Transfer of unutilised revenue to accumulated funds	1,080
	$9,818		$9,818

Balance sheet at 30th June 1983

Liabilities			Assets	
Balance 1st July 1982	$111,686		Investments in Govt. Securities (face value)	$112,580
			Commonwealth Bank savings	3,769
Unutilised revenue at 30th June 1983	1,080	112,766	Accrued interest at 30th June 1983	1,617
Commitments at 30th June 1983		5,200		
		$117,996		$117,996

Statement of Receipts — Consolidated Revenue Fund Year Ended 30th June 1983

Receipts for Services Rendered —

	$
Rents	540,538
Fees — State Acts	
Apiaries Act Registrations	43,986
Dairy Industry Marketing Authority Act	4,732
Farm Produce Agents Act	1,364
Fertilizers Act	27,810
Pesticides Act	94,155
Poultry Processing Act	183,500
Registration of Stock Brands Act	24,652
Swine Branding Act Registrations	29,479
Stock Food and Medicines Act	212,403
Veterinary Surgeons Act	103,757
Broiler growing agreements	15,060
Ovine brucellosis accreditation	10,560
Fisheries and Oyster Farms Act	645,984
Contribution from Commonwealth	
For administration of *Commerce Act*	871,965
From CSIRO for cotton research	111,408
For laboratory on dairy detergents and sanitisers	66,856
For administration of plant quarantine	2,403,400
For administration of animal quarantine	729,930
For export certification of livestock	176,000
From apprentices fulltime training scheme	19,713
For administration of Commonwealth fisheries	295,000
Fees — services rendered	
Inspection — Plant Diseases Act	98,031
Herd recording	495,922
Seed certification & testing	34,904
Cattle testing	44,485
Miscellaneous receipts for services rendered	355,296
Dipping	15,880
Administration costs — T.B. & B. eradication working account	360,860
Reimbursements — China projects	187,335
Administration costs — Cattle Compensation Fund	42,174
Administration costs — Swine Compensation Fund	6,750
Inspection — Meat Industry Act	6,143,955
Collecting commission	45,074
Total receipts for services rendered	14,442,918

General Miscellaneous Receipts	$
Fines and forfeitures (including bond liability)	20,931
Sales and services — Graham Park Breeding Service	529,222
Repayment to credit of previous year's votes	692,041
Interest	2,043
Sale of farm produce	827,020
Sale of government property	167,158
Transfer of part balances of Special Deposits Accounts no longer required	6,111
Employers liability to State Superannuation Fund	823,977
Miscellaneous unclassified receipts	102,205
Pastures Protection Board 3% contribution	18,701
Sale of publications	40,370
Fees — public officers	2,878
Stamp duty — oyster lease documents	675
Total miscellaneous receipts	3,233,332
Grand total — all receipts	17,676,250

Appendix IV Committees, Councils, Trusts & Marketing Boards

Agricultural Bureau State Council
Agricultural Chemicals Committee, Department of Primary Industry
Agricultural Education Coordination Committee
Agricultural Remote Sensing Sub-committee
Air Cargo Facilitation Committee
Argentine Ant Eradication Committee
Australian Pesticides Analytical Committee
Australian Seed Industry Advisory Committee
Australian Seeds Sub-committee
Australian Society of Animal Production, Hunter Valley Branch
Australian Soil and Land Resource Committee
Australian Tobacco Board
Australian Veterinary Association Liaison Committee
Australian Weeds Sub-committee
Banana Marketing Control Committee
Barley Industry Liaison Committee
Barley Marketing Board
Brucellosis and Tuberculosis National Planning Group.
C.B. Alexander Agricultural College Advisory Council
CSIRO Vine Improvement Research Committee
Catchment Area Protection Board
Central Coast (NSW) Citrus Marketing Board
Central Coast Agricultural Research & Extension Committee
Central Tobacco Advisory Committee
Certificated Seed Potatoes NSW Co-operative Ltd.
Chemicals Review Committee (CRSC) to National Advisory Committee on Chemicals
Chief Quarantine Officers (Animals) Committee.
Chief Quarantine Officers (Plants) Committee
Co-ordinating Sub-committee on Agricultural Engineering
Coal Research Development Committee
Coastal Council of New South Wales
Committee to Recommend Safety Directions and First Aid Statements for Pesticides, Poison Schedule (Standing) Committee, National Health and Medical Research Council.
Commonwealth Livestock Transport Committee.
Commonwealth Technical Committee on Agricultural Chemicals.
Coordinating Committee on Pesticide Residues in Meat, Australian Meat Research Council, Queensland
Correspondence Courses Management Committee
Course Advisory Committee for the Life Sciences, New South Wales Institute of Technology.
Departmental Committee on Pesticide Residues in Animals, Animal Products, Plants and Plant Products
Determination of Contaminants in Soil, Standards Association of Australia Committee
Division of Animal Health — Animal Health Emergency Committee.
Dried Fruits Research Committee
Eighth Conference of the International Organization of Citrus Virologists Trust Committee.
Environmental Protection of Areas Affected by Agricultural Activities
Subcommittee of Technical Advisory Committee of State Pollution Control Commission
Essential Oils, Standards Association of Australia Committee
Executive Committee — Weed Society of NSW
Farm Produce Combined Industry Committee
Fresh Fruit Disinfestation Sub-committee
Fruit Variety Foundation Sub-committee
Gosford Horticultural Postharvest Research Laboratory Advisory Committee
Greening Australia Conference
Guayule Research Development Co-ordinating Sub-committee
Hawkesbury Agricultural College Agriculture Course Advisory Group
Herd Improvement Committee.
Horticultural Stock & Nurseries Act Advisory Committee
Horticulture Postharvest Sub-committee
Inter-Governmental Liaison Committee on Water Hyacinth
Inter-departmental Committee on Pesticide Residues and Economic Poison
Inter-departmental Committee on Surface Coal Mining of Alluvial Lands
Interdepartmental Committee on Pesticide Residues and Economic Poisons
Interdepartmental Liasion Committee — Animal Welfare
International Committee for Assessment of Ruminant Anthelmintics.
Joint Rural Land Advisory Committee
Laboratory Glassware and Related Apparatus, Standards Association of Australia Committee
MIA Irrigation Research & Extension Committee
McGarvie Smith Institute (Trust) Murray Valley (NSW) Citrus Marketing Board
NSW Government Committee of Inquiry into the Use and Safety of 2,4,5-T
NSW Herbage Plant Liaison Committee
NSW Horticultural Export Liaison Committee
NSW Horticultural Propagation Co-operative Society Ltd.
NSW Remote Sensing Technical Working Party
NSW Science and Technology Council — Study Group on Genetic Engineering.
NSW Tobacco Advisory Committee
National Association of Testing Authorities
National Co-ordinating Committee on Aquatic Weeds
National Tree Program — State Coordinating Committee
National Wheat Rust Control Sub-committee
New England, Hunter & Metropolitan Region Board of Management
New South Wales Stock Medicines Board
North West Pesticides Coordinating Committee
Noxious Plant Advisory Committee Oat Industry Advisory Committee
Oats Marketing Board
Open Cut Mining Rehabilitation Subcommittee of Technical Advisory Committee of State Pollution Control Commission
Ornamental Horticulture Advisory Committee
Pastures Protection Board Boundaries Committee.
Pesticides Act Advisory Committee
Pesticides and Agricultural Chemicals (Standing) Committee of the National Health and Medical Research Council.
Plant Genetic Resource Sub-committee
Poisons Advisory Committee
Port Facilitation Committee
Potato Growers Association of NSW
Processed Apple & Pear Sub-committee
Regional Wild Pig Advisory Council
Rural Youth Junior Management Committee
Rural Youth Senior Management Committee
Rural Youth State Council
Standards Association of Australia on Detergents and Sanitisers.
Standards Association of Australia, Committee CH/5 — Pesticides.
Standing Committee on Agriculture, Animal Health Committee
    Sub-committee on Animal Welfare
    Sub Committee on Pesticides
    Sub Committee on Therapeutic Goods
    Sub-committee on Equine Metritis.
    Sub-committee on Hydatids.
    Sub-committee on Tuberculosis and Brucellosis
    Sub-committee on Veterinary Public Health.
Standing Committee on Agriculture Plant Health Committee
Standing Committee on Agriculture Plant Production Committee
State Wheat Advisory Committee
State Wheat Improvement Committee
Stock Medicines Board
Technical Advisory Committee of State Pollution Control Commission
Technical Committee or Veterinary Drugs
The Poisons Advisory Committee Non-Therapeutic Sub-Committee, Department of Health, New South Wales.
University of Sydney Postgraduate Foundation in Veterinary Science
Veterinary Surgeons Board
Veterinary Surgeons Investigating Committee

Appendix V Report of the Prickly-Pear Destruction Commission for the year ended 30th June 1983

The Hon. J.R. Hallam, M.L.C.
Minister for Agriculture and Fisheries

Sir,

I submit the report of the Prickly-pear Destruction Commission for the year ended 30th June 1983.

The Commission is responsible for the eradication and control of prickly-pear throughout New South Wales and all phases of the Commission's activities were continued during the year.

The Commission continued to use integrated control with emphasis on biological control of pest pear species. A programme involving the distribution of prickly-pear insects cactoblastis, *Cactoblastis cactorum,* and cochineal, *Dactylopius austrinus* and *D. ceylonicus;* the use of chemicals, cultivation and other mechanical methods; plus a constant inspection programme, had reasonable results.

Common pest pear, *Opuntia inermis,* harrisia cactus *Eriocereus martinii,* tree pear, *O. tomentosa,* smooth tree pear, *O. monacantha,* and rope pear, *O. imbricata,* were being controlled. Tiger pear, *O. aurantiaca,* is still presenting a serious problem on river frontages of the Horton, Gwydir, Severn, Dumaresq, Namoi, Peel, Castlereagh, Hunter, Goulburn, Turon and Macquarie Rivers and some of their tributaries. Infestations of creeping pear, *O. compressa,* in the Hunter Valley, araluen pear, *O. lindheimri,* in the Araluen Valley, and Riverina pear, *O. bonaerensis,* in the Riverina area were monitored, and control measures undertaken where necessary.

Prickly-pear insect breeding facilities were erected at the Commission's Bingara, Tamworth, Scone and Dubbo depots. Each unit consists of two controlled temperature rooms, three metres by three metres, equipped with reverse cycle air conditioning, and all units will be fully operational by October 1983.

Field breeding of prickly-pear insects will continue when weather conditions are suitable but the main emphasis of the Commission's future biological campaign will centre on the controlled temperature units. The Commission's entomologist is developing a breeding programme that will enable insects to be produced all year, allowing release at the most opportune time for satisfactory results.

During 1982-83 the Commission continued to assist landholders, Government departments, shire councils, Pastures Protection Boards, trustees of commons, cemeteries, parks and reserves to destroy pest pear species on lands under their control. Gangs of men were available from the Commission to carry out biological and chemical control work. Much of this work was subsidised by the Commission on a dollar for dollar basis. A prickly-pear spray was supplied at cost price, and when purchased to control tiger pear, it was supplied at half price. The cost of free control work and free prickly-pear spray supplied during the year to landholders, Government departments and instrumentalities, was $108,99.31.

The control of pest pear species on all unoccupied Crown lands is the responsibility of the Commission. This work was continued throughout the year at a cost of $26,557.37. Prickly-pear control work costing $138,616.04 was carried out under contract by the Commission for 160 private landholders. The Commission subsidised part of this work, at a cost of $58,847.22. Some owners were also assisted by allowing them to pay by instalments over a period of years at a low interest rate.

The Commission continued to make supplies of prickly-pear insects available to landholders free of cost. The insects were liberated and spread on properties by Commission staff where considered warranted.

The Prickly-pear Destruction Commission had a staff of three administrative officers, two scientific officers engaged on research work, and 42 men on field duties. They comprised 10 Public Service appointees and 37 employed under the Prickly-pear Act. The field staff operated from office and depot facilities at Dubbo, Mudgee, Scone, Singleton, Seven Hills, Tamworth, Bingara, Ashford, Moree and Mungindi.

In 1982 a Working Party was convened by the Director-General of Agriculture to investigate and make recommendations on means of achieving further integration of the Prickly-pear Destruction Commission within the Department. In addition to recommendations reported in 1981-82, the Working Party recommended that the Commission's half-cost field work programme be phased out as soon as practicable. With the Minister's approval, action was taken to implement this recommendation and half-cost field work will cease from 1st January 1984. The only half cost work to be carried out between 1st July and 31st December 1983 will be work honouring contracts made before 30th June 1983.

The total expenditure by the Commission for the year ended 30th June 1983, was $1,371,160.54, an increase of $80,208.82. Sundry debtors decreased by $2,447.13. The amount outstanding is $8,291.71 compared to $10,738.84 last year.

There were 46 prickly-pear leases (covering an area of 22 355 hectares) as at 30th June 1983, of which 39 (15,949 hectares) were leases in perpetuity.

A statement of income and expenditure of the Prickly-pear Destruction Commission for the year ended 30th June 1983, follows.

G E Ryan
COMMISSIONER
23rd August 1983

Prickly-pear Destruction Commission Statement of Income and Expenditure as at 30th June 1983

	$		$
Balance in Fund as at 30th June 1982	33,212.58	Salaries	241,826.33
Supplementation from Consolidated Revenue	1,100,000.00	Wages	586,663.00
		Allowances	15,256.18
Appropriation	60,000.00	Workers Compensation and Payroll tax	71,711.48
Collections	178,812.69	Salary items not subject to Payroll Tax	0.00
		Travelling allowances and expenses	75,468.30
		Maintenance of motor vehicles and caravans	98,179.10
		Purchase of motor vehicles and caravans	83,275.74
		Purchase of stock, plant and minor equipment	158,739.42
		Rents, rates, freight and cartage	12,591.30
		Buildings, improvements and insurance	21,662.75
		Postal and telephone charges	5,786.94
			$1,371,160.54
		Balance unexpended as at 30th June 1983	864.73
	$1,372,025.27		$1,372,025.27

Appendix VI Agricultural College Courses and Student Statistics

Student Statistics

Enrolments 1983	Male	Female	Total
C.B. Alexander Agricultural College			
Certificate in Agriculture	61	16	77
Advanced Certificate in Agriculture	32	14	46
Dairy Apprenticeship Course	9	2	11
	102	32	134
Murrumbidgee College of Agriculture			
Certificate in Agriculture	65	5	70
Advanced Certificates:			
Agriculture	6	6	12
Rangeland Management	3	—	3
Irrigation	4	—	4
	78	11	89
Correspondence Courses Production Unit			
Farm Management	242	69	311
Farm Office Management	62	132	194
	304	201	505

Certificates Gained 1982	Male	Female	Total
C.B. Alexander Agricultural College			
Certificate in Agriculture	42	16	58
Advanced Certificate in Agriculture	34	7	41
Certificate in Dairying	8	—	8
	84	23	107
Murrumbidgee College of Agriculture			
Certificate in Agriculture	41	8	49
Advanced Certificates:			
Agriculture	11	1	12
Rangeland Management	3	1	4
Irrigation	7	—	7
	62	10	72

Short Courses — Murrumbidgee College of Agriculture

Course	No. of students
Farm Office Management	16
Rural Youth Senior Awards Judging	24
Rural Youth State Convention	80
Landforming for irrigation	25
Ricegrower School	25
Landforming for irrigation	25
Communications workshop	24
Landforming for irrigation	22
Rural Youth State Camp	30
Herbicide applicators course	27
Regional squads joint exercise	50
In-service irrigation course	23
Farm Office Management	16
Nutrition school	50
Regional Advisory Conference	70
Artificial breeding workshop	25
Artifical breeding workshop	20
Lions youth Leadership camp	30
Short course workshop	12
ADAB visit	15
Australian rice workshop	20
TV video workshop	15
Vegetable field day	60
Computer course	15
Citrus — vines in-service course	22
Glider workshop	25
Farm Management Course	16
Embryo transfer	15
Embryo transfer	22
Tri-State soil conference	40
Truck driver training	6
Spray technology workshop	72
Farm Management Correspondence Course	14
Regional veterinary conference	21
C.Y.S.S. conference	40
Landforming for irrigation	18
Farm Office Management	14
Irrigation equipment field day	10
Youth and Community Services	50
Landforming in irrigation	15

Short Courses — C.B. Alexander Agricultural College

Course	No. of students
Viticulture seminar	45
Teachers conference	35
Angus breeders school	25
Career development for women	30
Dairy research symposium	60
Rural Youth school	80
Beef marketing seminar	95
Agriculture field day	100
Human nutrition seminar	25
Dairy cattle nutrition workshop	20
Farm Office Management school	15
Agricultural teaching staff development conference	60
Rural Youth competition	90
WEA Summer school	104
Tocal Summer school	55
Rotaract conference	60
Livestock research officers conference	46
Research station foremen's conference	30
Land assessment seminar	14
Counselling skills workshop	36
Soccer referees coaching school	20
Greening of Australia seminar	30
Cooperating farmers seminar	20

Appendix VII Fisheries

Seizure of Fish

Under the Fisheries and Oyster Farms Act, 1935, and Regulations, an Inspector may seize all fish consigned or exposed for sale within the district which are diseased, unwholesome or in a condition known as 'earthy', or otherwise unfit for human consumption. Details of fish seized for the year are:

District	Fish	Prawns	Crabs	Crayfish	Abalone
	kg	kg	kg	kg	kg
Ballina	450	—	—	1	—
Maclean	916	202	—	—	—
Coffs Harbour	14	127	—	—	—
Port Macquarie	61	—	—	—	—
Taree	—	85	—	—	—
Tuncurry	5	—	—	—	—
Newcastle	163	48	—	—	—
Swansea	26	—	—	—	—
Toukley	1	—	—	—	—
The Entrance	18	—	—	—	—
Nowra	403	—	—	—	—
Ulladulla	—	—	—	—	3
Sydney Fish Centre	171 296	3 646	4 933	277	—
TOTAL:	173 353	4 108	4 933	278	3

Warmwater Fish Stocking Since 1976 (Excludes stocking by angling clubs etc.)

Impoundment	Year 1976-77	1978-79	1979-80	1980-81	1981-82	1982-83
Glenbawn Dam	157 800gp 68 000sp					
Lake Wyangan	12 500gp 12 500sp			30 0000sp		
Lake Albert	25 000gp			28 300gp		
Burrendong Dam		179 800gp 54 700sp				
Copeton Dam		199 900gp				
Wyangala Dam		106 500gp			62 400sp	
Burrinjuck Dam		35 000gp	121 400gp	26 200sp		
Gillenbah lagoon		147 500gp				
Lake Sooley			20 000sp			
Lake Bathurst			21 700sp			
Lake Mulwala			43 700gp 48 000sp	129 200gp	113 100gp	18 400sp
Blowering Dam				251 300gp		
Yass Weir				26 000gp		
Ben Chifley Dam				23 000gp		
Pindari Dam				91 900gp		
Crookwell W.S.Dam					15 400sp	
Pejar Dam					21 400sp	
Lake Centenary					21 100gp	
Chaffey Dam					91 800gp	
Urana Dam					10 600gp	
Berrima Weir					32 300sp	
Marsden Weir					33 000sp	
Googong Dam					100 000sp	
Hume Weir					86 400sp 181 200gp	
Lostock Dam				15 000Ab		
Hepburn Dam				8 000Ab		
Kitchener Dam				800Ab		
Farley Lake					4 400Ab	
Brogo Dam					12 000Ab	
Toonumber Dam					25 000Ab	
Danjera Dam					27 000Ab	
Manly Dam						12 000Ab
Lake Parramatta						17 000Ab
Lake Wallerawang						15 000Ab
Totals gp	195 300	668 700	165 100	549 700	236 600	181 200
sp	80 500	54 700	89 700	56 200	99 200	270 100
Ab				23 800	68 400	44 000
TOTAL	275 800	723 400	254 800	629 600	404 200	495 300

KEY gp: golden perch sp: silver perch Ab: Australian bass

HATCHERIES

Gaden Trout Hatchery Releases

Atlantic Salmon:

70 000 ova to Oberon branch CAS*	August 1982
242 000 fry to Lake Jindabyne	October 1982
29 500 fingerlings to Thredbo	April 1983
4750 yearlings to Burrinjuck	November 1982
4000 > yearlings to Talbingo	December 1982
528 redundant brood fish to Lake Jindabyne.	

Brown Trout:

20 000 finclipped yearlings to Kybean & Coolumbooka Rivers	August 1982
12 500 fingerlings to Campbells River	September 1982
10 200 finclipped yearlings to Evans Plains Creek	October 1982
5 500 fingerlings to MacLauglin River	June 1983
5 500 fingerlings to Bobundara Creek	June 1983
9400 fingerlings to Jounama Pondage	April 1983
12 350 Private sales.	

Rainbow Trout:

60 000 to Lake Jindabyne	November 1982
20 000 Island Bend	November 1982
20 000 Lake Guthega	November 1982
84 000 Lake Eucumbene	November 1982
127 000 MAS branches*	November 1982 December 1982
13 000 OTAS*	December 1982
100 000 Fitzroy Falls Reservoir	December 1982
50 000 Peemjar Dam	December 1982
85 000 SDA branches*	December 1982

Total 567 000

Two thirds of this total were from fish captured in the Eucumbene River in a temporary trap during August 1982

*CAS: Central Acclimatisation Society
MAS: Monaro Acclimatisation Society
OTAS: Orange Trout Acclimatisation Society
SDA: Council of Southern Districts Angling Clubs

Dutton Trout Hatchery Releases

Rainbow Trout

1 100 000 fry to NETAS*
100 000 eyed ova to WTC*
1 688 ex brood stock to various streams

Brown Trout

76 457 fingerlings to various streams

*NETAS: New England Trout Acclimatisation Society
WTC: Walcha Trout Club

PROSECUTION STATISTICS

Offences	Number reported
Fishing, or possessing fishing gear on or adjacent to inland waters without an inland angling licence — S. 25B(1)(a) & (1)(b)	405
In possession of fish suspected of having been taken illegally — S. 114	316
Illegal, or illegal use of, gill nets — Reg. 28.	4
Attempting to net, netting or in possession of nets on closed waters, or amateur fishermen fishing in closed waters or by unprescribed means — S.18 & 19	607
In possession of or consigning undersize fish — S. 116	329
Use of illegal otter prawn or fish trawl nets — Reg. 22 & 23	55
Illegal use of nets by amateur fishermen — Reg. 139	235
Failing to produce licence — S.103(1)(c)	122
Illegal or illegal use of cross-lines or setlines — Reg. 13	40
Miscellaneous	316
TOTALS	2 429

LICENCES

As a consequence of the review of the Inland Fisheries Fund, inland angling licence fees were increased to $10 for a full year and $5 for five days.

The previous 21 day licence was abolished when the new fees came into effect in September 1982.

Issue of Commercial Fishing Licences

Type of licence	No. Issued	Revenue
		$
Fisherman's licence (Includes 163 commercial inland fishermen)	3 608	360,800
Fishing boat licences	3 647	145,550
Net registration certificates	2 475	2,475
Oyster vendor's licences	336	3,360
		$512,185

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